THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

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THIS WEEK'S NEWS

AN ASSURANCE that a recent addition to the Code of Conduct does not prohibit, and is not intended to prohibit, an architect from keeping the Press informed of work on which he is engaged is given by the Registrar of the Architects' Registration Council. *p.* 443

RECOMMENDATIONS upon the minimum sizes of helicopter landing grounds, and estimates of the cost of roof-top sites, are contained in the first report of the Interdepartmental Helicopter Committee. *p.* 458

MR. DALTON stated in Parliament on March 20 that his advisers and he had been studying various plans of houses costing less than £1,000 which had recently been prepared; he hoped soon to publish a circular on the designs of council houses. *p.* 459

THE NATIONAL CONSULTATIVE COUNCIL has approved the report on "Modern Methods of Plumbing and Draining" prepared by the committee set up by the Ministry of Works to study this subject with special reference to the Anglo-American Productivity Team report on American methods of plumbing and drainage. *p.* 464

FESTIVAL CLEANING

WE have never been among those who have decried either the principle or the *realisation* of the Festival of Britain, especially the South Bank project. Given a reasonably dry summer and a minimum use of negatives by our Russian friends, we believe that Mr. Morrison and the Government will yet earn commendation, for this affair at least, from those who at present find little to say in its favour.

One Festival effort which, however, we are unable to appreciate is the cleaning of certain of our public buildings. Where these are built of Portland stone the effect is the reverse of that intended. An example of what we mean is the National Gallery which is at present being cleaned down. Now the charm of Portland stone in London is the contrast between the sooted portions and those which are scoured white by rain and wind from the south-west. Inspection of the western part of the front to Trafalgar-square will show how unattractive is the result attained by cleaning. Instead of the well-loved contrast of white and sooty planes, there greets the eye a dingy expanse of yellowed stone set off by patches of rust-coloured brown. This is no criticism of the cleaners; it is just that experience would seem to show that Portland stone does not respond to such treatment. May we hope that the Ministry of Works will halt any further schemes for cleaning Portland stone structures while they consider whether the effect achieved is worth the expenditure of the money and labour involved?

BRITISH STANDARDS INSTITUTION

FOR many years the British Standards Institution has been recognised as the responsible body for drawing up standard specifications for the building industry. It will be generally agreed that they have done the job well, so it is pleasant to find that the committee, which has been enquiring into the organisation and constitution of the B.S.I., has recommended that it should remain the body responsible for drawing up standard specifications and assisting in the preparation of building codes of practice.

The appointment of this committee resulted from a statement made in the House of Commons nearly two years ago by Mr. Harold Wilson, President of the Board of Trade, when he said that the Government were fully alive to the contribution which standardisation could make to economy of production and to the well-being of the country, both by savings in production costs and by guarantees to the consumer. Mr. Wilson went on to say that further advances in standardisation could not be obtained without a good deal of hard work and careful technical examination. This would mean more work for the B.S.I., and the question of an increased Government grant would have to be considered. Before making an increased grant, however, Mr. Wilson said that it was desirable that the constitution and functions of the B.S.I. should be reviewed.

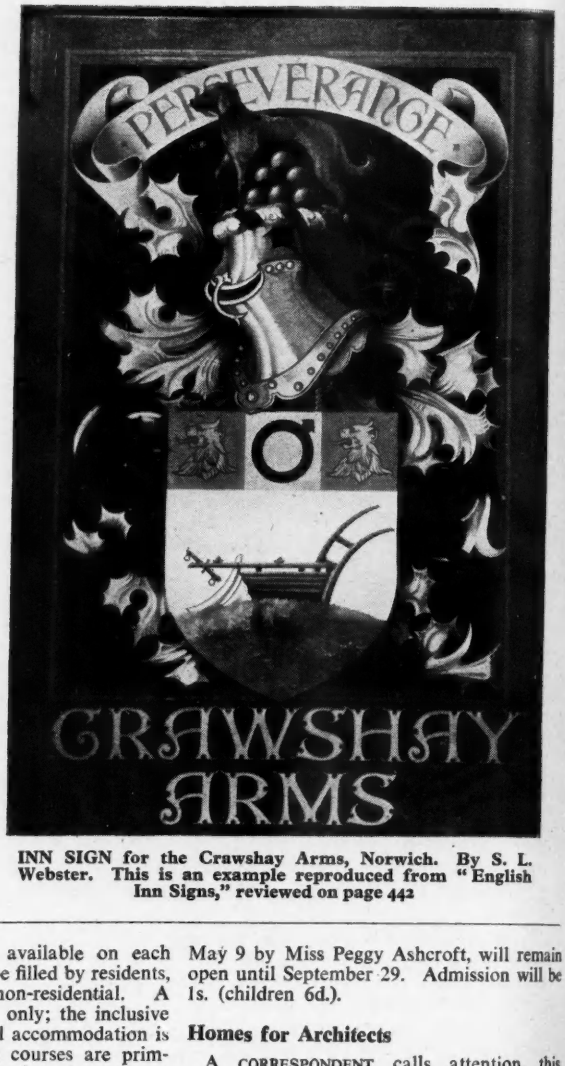
The committee, of course, covered the whole work of the B.S.I., which includes a great deal else besides work on building standards. The pattern of organisation, however, is similar throughout. New standards are only prepared on receipt of a specific request from one or more of the interests involved, and when received such requests are considered by the appropriate industry committee, which may then appoint a technical committee to prepare a draft standard. As is well known, the draft is then widely circulated for comment before being published in its final form. This is a sound, well-tried procedure, and if the committee had any criticism of it it was that more regard might be paid to consumer interests. This criticism probably does not apply to any great extent on the building side, where the consumer interest is well represented by the architectural profession and by the builders, but it is to be hoped that the B.S.I. will have constant regard to this point in its application to building.

The Government's desire that standardisation should be extended, and their willingness to help by increasing the amount of their grant to the B.S.I., does raise the question as to what are the advantages of standardisation to the building industry. Standardisation really has two aspects—the qualitative and the

dimensional. As far as the first aspect is concerned the advantages of standardisation are obvious. The adoption of British Standard specifications does afford the public the assurance that materials and components used in building are of sufficiently good quality for the purpose for which they are intended. Standardisation in this sense is thus a valuable safeguard against jerry-building. It is also of considerable benefit to the architect in that it simplifies the drawing up of specifications and obviates the necessity of much copying and repetition work.

The advantages of standardisation in its other sense are also sufficiently obvious to require little emphasis. Dimensional standardisation and the elimination of unnecessary designs and types are clearly advantageous in that they facilitate interchangeability, and by encouraging mass-production reduce costs. It is these advantages, no doubt, that have led so many reports and statements (official and unofficial) on post-war building policy to emphasise the importance of greater standardisation. We certainly have no quarrel with the view that dimensional standardisation has considerable economic benefits, but we would utter a warning against over-optimism in this connection. The adoption of dimensional standardisation by manufacturers is not always immediately possible because it may require a certain amount of adaptation on their part which may not be easy to achieve in these difficult days of post-war shortage. For that reason proposals for dimensional standardisation require careful scrutiny. Happily the machinery of the B.S.I. makes such scrutiny possible. Finally, an over-rigid application of standardisation could be a serious brake on progress and experiment in building technique.

Within these limits, however, there is scope and need for increased standardisation in the building industry. We hope that the industry will respond to the committee's request for greater support for the B.S.I. from industry generally. The committee were strongly of the opinion that the independence of the B.S.I. must be preserved and that industry, as well as the Government, must play its part in finding the increased income which the B.S.I. must have if it is to extend its activities.



INN SIGN for the Crawshay Arms, Norwich. By S. L. Webster. This is an example reproduced from "English Inn Signs," reviewed on page 442

NOTES AND NEWS

R.I.B.A. and Festival of Britain

IN the programme of arrangements being made by the R.I.B.A. in connection with the Festival of Britain is an exhibition "One Hundred Years of British Architecture." It will be opened on July 11 by the Earl of Bessborough, Hon.F.R.I.B.A., and will remain open until September 8. A feature of the exhibition will be the showing of architects' original drawings, the intention being to illustrate buildings as their designers conceived them. The exhibition will cover as equally as is possible the 10 decades of the century, including the one that has just ended.

A second item is the establishment of an Information Bureau at the Royal Institute to handle inquiries and to assist Dominion and foreign architects. The organisation of both the exhibition and information bureau are in the charge of the Public Relations Committee and under the direction of Mr. R. W. M. Orme, Assistant Secretary, R.I.B.A.

Festival of Britain Courses

THE BRITISH COUNCIL has arranged a series of 11 six-day courses on cultural subjects to be held in London between June and September, designed to illustrate or supplement the Festival of Britain programme, among them being the "Characteristic Styles of British Architecture" (June 24-30), and "Industrial Design" (August 19-25). One hundred places will be available on each course, 25 of which will be filled by residents, the remaining 75 being non-residential. A fee of £2 covers lectures only; the inclusive fee for lectures, visits and accommodation is £12 10s. Although the courses are primarily arranged for visitors from overseas, a small number may also be available to British applicants.

History of the South Bank

WHILE THE NATION'S ACHIEVEMENTS are being shown to the world at the South Bank exhibition during the Festival of Britain, alongside, at the County Hall, the London County Council have arranged an exhibition to tell the history of the South Bank itself.

The exhibition will trace the development of the South Bank from Roman times, when it was mostly marsh, to the coming of the railways in the nineteenth century. Things in everyday use will be used to illustrate each period, and there will be pictures and models of craft which have plied the Thames above London Bridge during the last 300 years.

The history of literature and drama will also be told. There will be a new model of the original Globe Theatre, and the story of Shakespeare on the South Bank will be brought up to date by a theatre set from a recent performance of Twelfth Night at the Old Vic, and by portraits of Old Vic actors and actresses. The industries which have been carried on in the area will also be portrayed.

The exhibition, which is to be opened on May 9 by Miss Peggy Ashcroft, will remain open until September 29. Admission will be 1s. (children 6d.).

Homes for Architects

A CORRESPONDENT calls attention, this week, to the fact that after nearly three months no more than £6,595 has been received in response to the appeal of the President of the R.I.B.A., for a sum of £50,000 for the building, under the auspices of the Architects' Benevolent Society, of cottage homes for aged architects. He regards this as a poor response in view of the fact that there are 16,312 Registered Architects in this country and that many contributions have come from overseas and from non-architectural sources. He ends by asking whether the appeal has failed. We do not believe so. Contributions should continue to come in, but they might well do so more quickly. Dilatory subscribers may be reminded that the fund is still open and that the address of the A.B.S. is 66, Portland-place, W.1.

Paintings by Oliver Hill

SOME FIFTY OILS by Mr. Oliver Hill, F.R.I.B.A., are now on view at Messrs. Thomas Parsons' gallery at 70, Grosvenor-street, Bond-street. They cover a wide field of landscape, from Rye to Bryher in the Scillies, but there are two main groups—Majorca and Iona. All display to advantage Mr. Hill's vivid sense of colour and grasp of linear perspective, and it is the

LOW-COST HOUSING

Designs to be on view in Birmingham

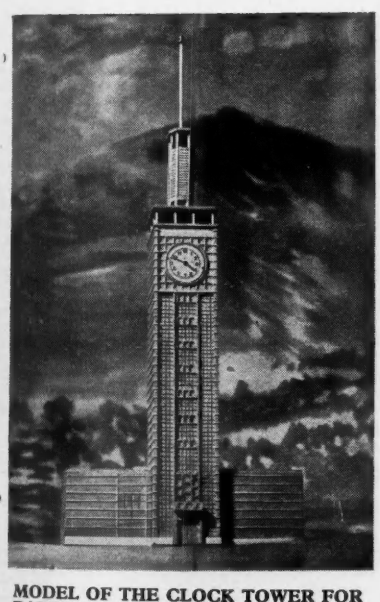
THE exhibition of designs submitted in "The Builder" competition for a terrace house to cost not more than £1,000—recently on view at the Housing Centre, London—will be on show in Messrs. Lewis's store, 32, Bull-street, Birmingham, for a fortnight from Monday, April 9.

The exhibition will be opened at 12 noon on April 9, by Mr. G. B. Cox, F.R.I.B.A., President of the Birmingham and Five Counties Architectural Association.

About 25 designs (including the nine placed by the assessors) will be shown, in addition to which models of the designs placed first, second and third will be seen. They are a selection from a total of 322 designs submitted in the open architectural competition assessed by Sir Lancelot Keay, K.B.E., M.Arch., PP.R.I.B.A., Mr. Arthur Kenyon, C.B.E., F.R.I.B.A., M.T.P.I., and Sir Stephen Tallents, K.C.B., Hon.A.R.I.B.A.

greater pity that in some subjects, especially the Spanish ones, this exuberance has run away with his brush; foreground and background are insufficiently differentiated, and sense of perspective and tone values is lost. In some others, and particularly in the Scottish landscapes, the impression of high-lit foreground subjects is negatived by sullen, overcast skies. Mr. Hill has his successes, however, and "Solva" (No. 16), "Regents Park" (24), "Iona" (32), "Thames at Goring" (50) and "near Glynde" (27)—a landscape having the authentic Sussex flavour of rolling down and seemingly static skies—will bear comparison with professional standards.

The exhibition—which is in aid of the National Association of Boys' Clubs—remains open until April 13, 10 a.m. to 5 p.m.



MODEL OF THE CLOCK TOWER FOR PARLIAMENT BUILDINGS, NAIROBI, which have been the subject of a recent competition. The model was constructed by the West Sussex Joinery Company. Architects: C. A. Levick, B.Arch., A.R.I.B.A., P. H. Connell, A.R.I.B.A., and S. T. Croft, of Durban

Architect's Role in Civil Defence

A PAMPHLET OUTLINING the architect's participation in civil defence activities has been published in the U.S.A. by the American Institute of Architects. It is the work of a group of architects headed by Harry M. Prince, former New York City building commissioner, who served in England during the last war as an observer for the U.S. civilian defence official, Fiorello H. LaGuardia.

Architects can best fit into the civil defence programme, the report recommends, in ways that utilise their technical qualifications. They can apply government civil defence directives and standards for the structural protection of the public, and the tenants of buildings, in order to provide as much safety as possible against all forms of attack. It is suggested also that they can design protective measures in new construction; plan defence structures so that they may be readily converted to peacetime usefulness; recommend measures to strengthen zoning, building and housing ordinances; and advise on the civil defence aspects of city planning.

"As terrible as any bomb is, no bombing, even by atom bombs, will mean the end of our cities, as some people think," Mr. Prince is reported to have stated. "By careful study and planning now, and by a full understanding of what can be done in advance by protective measures, the effect of bomb explosions can be minimised."

This pamphlet, the first of a series being prepared by the Institute's national defence committee, surveys briefly the main fields of civilian defence from an architectural viewpoint and deals with the design of shelters, in existing buildings and externally, the design of evacuation centres, housing and emergency shelters, and the repair of war damage.

Changes in Housing Estimates

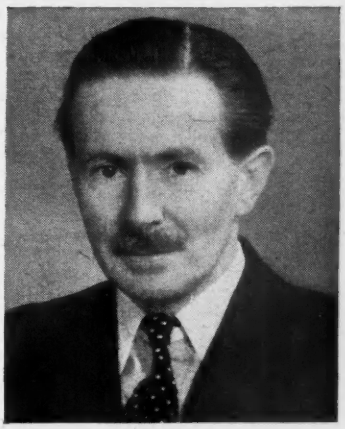
THE DECREASED EMPHASIS on temporary housing and the redistribution of functions between the Ministries of Health and Local Government and Planning are reflected in the Civil Estimates, 1951-52, Class V (Stationery Office, 4s.), published on March 27.

The Estimates for housing in Great Britain show that £2,319,700 more will be required for permanent housing and £3,889,000 less for emergency housing, representing a net decrease of £455,510. The total provision for housing services, including housing the aged and infirm, research, development, and administration, is £62m.

The Estimates for the Ministry of Local Government and Planning and the Ministry of Health show a transfer of 2,440 members of the staff of the latter department to the staff of the former, increasing the staff of the Ministry of Local Government and Planning from 1,281 to 3,721. Both departments make increased provision for civil defence services, involving a total of £450,000.

Professional Announcements

We have been informed that from April 2 the telephone number of Messrs. HAMMETT AND NORTON, AA.R.I.B.A. 29, Sackville-street, W.1, will be Grosvenor 5987-8.



MR. E. D. JEFFERISS MATHEWS, F.R.I.B.A., A.R.I.C.S., who has been elected chairman of the Architects' Registration Council

MESSRS. F. J. MEEKINS AND PARTNERS, quantity surveyors, announce that MR. H. SIEGENBERG, F.I.A.S., has joined them in partnership as from February 19 last.

MESSRS. DAVIES AND BULL, quantity surveyors, inform us that they have removed from 30, Church-street, Croydon, to new offices at General Buildings, 20/22, Addiscombe-road, Croydon. Tel. No. Croydon 6115.

MR. PETER G. D. LYNDE, A.R.I.C.S., son of the senior partner of MESSRS. ERIC G. LYNDE AND PARTNERS, is being taken into partnership as from April 1. The style of the firm will remain unchanged.

COMING EVENTS

Saturday, March 31

INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Annual dinner and dance, Mapleton Restaurant, Coventry-street, London. 6 p.m.

Monday, April 2

R.I.C.S.—"The Effect on Property of Modern Legislation and of Economic and Political Trends," by Mr. Bryan Anstey, B.Sc., F.R.I.C.S. 12, Great George-street, S.W.1. 5.30 p.m.

SOCIETY OF ENGINEERS.—"Experimental Stress Analysis," by Dr. Nicol Gross, A.M.I.Mech.E. Geological Society, Burlington House, W.1. 5.30 p.m

Tuesday, April 3

R.I.B.A.—Presentation of Royal Gold Medal for Architecture to Mr. E. Vincent Harris, O.B.E., R.A., F.R.I.B.A. 66, Portland-place, W.1 6 p.m.

BUILDERS' BENEVOLENT INSTITUTION.—Annual dinner Grosvenor House Restaurant. 7 p.m.

BUILDING ALLIANCE GOLFING SOCIETY.—Match against R.I.B.A.G.S. Royal Wimbledon Golf Club.

Wednesday, April 4

VICTORIA AND ALBERT MUSEUM.—"Some Aspects of Italian Sculpture," by Mr. John Pope-Hennessy. V. and A. Museum, South Kensington, S.W.7. 6.15 p.m.

Thursday, April 5

TOWN PLANNING INSTITUTE.—"Planning as the Instrument of Policy," by Sir George Pepler, C.B., F.R.I.C.S., Hon. A.R.I.B.A. Caxton Hall, Westminster, S.W.1. 6 p.m.

ILLUMINATING ENGINEERING SOCIETY (CARDIFF CENTRE).—"Colour and Lighting," by Mr. S. A. Wood. South Wales Electricity Board Demonstration Theatre The Hayes, Cardiff. 5.45 p.m.

FROM "THE BUILDER" OF 1851

Saturday, March 29, 1851

CANVASSING ARCHITECTS. — We have received from several quarters cards and circulars sent out by architects and surveyors soliciting business: in one the party offers to prepare schemes for drainage, etc., without requiring other payment than the expenses out of pocket. However derogatory such practices may be, we do not feel called upon to do more than allude to them.

ENGLISH INN SIGNS

LARWOOD AND HOTTEN'S "History of Signboards," first published in 1866, ran through many editions, the 12th and last having been published in 1907. It is now issued in a revised and modernised form,* though the name of the editor is not given. Without a copy of the original work before us it is not possible to judge the extent or nature of the revisions, though the text indicates a fair number of omissions. Obviously, a work of this kind must, in some respects, quickly become out of date, and the frequent occurrence of the words "in Larwood's time" shows how much that existed in 1866 has since disappeared. Revision was, therefore, necessary on questions of fact, though probably not, or only to a minor degree, on the general lore of the subject, on which the work is regarded as a classic.

Tradesmen's signs existed as far back as the time of the ancient Egyptians, though little seems to be known of them, nor of those of the Greeks. More is known of Roman signs, particularly from examples found among the ruins of Herculaneum and Pompeii; the *Bush*, indicating the sale of wine, being one of the earliest and most popular. It is presumed that our forefathers adopted the signboard from the Romans, and it flourished most of all during the mediæval period and later, when reading was a rare accomplishment, and a sign outside a shop was the readiest means of showing the nature of the trade carried on within; thus, a knife stood for a cutler, a stocking for a hosier, a hand for a glover, a pair of scissors for a tailor, a bunch of grapes for the vintner, an axe for the carpenter, and so forth.

Painted signboards, usually suspended from an iron bar fixed to the building or to a post in front of it, were then to be found in almost every street and must have made a picturesque and colourful display; ultimately they became something of a public nuisance and in the seventeenth century, in London, regulations were made to control them. With increasing literacy the need for signs declined and they fell out of general use, though they continued to be used in connection with inns, where they are still chiefly found to-day.

Over 300 of the 336 text pages of this book are devoted to the derivation and history of signs, which are considered under no fewer than 18 categories. The variety of the subject-matter of signs is extraordinary; the index contains over 3,000 names and it is not claimed to be exhaustive. The origin of many of them is obvious, some are difficult to explain exactly, while others are often quaint or fantastic, and may be, it is suggested, corruptions of earlier names —for example, "Bag-o-Nails" for "Bacchanals," "Billy Ruffian" for "Bellerophon," "Queer Door" for "Cœur Dorée" —changes which may have come about either by deliberate intent or by accident in the repainting of signs, a process to which they have always unfortunately been subject, thereby losing much of their original artistic quality. Obviously, speculation can be overdone about many of these odd names, which probably mean exactly what they say, for a touch of facetiousness is by no means incompatible with the tavern. The whole subject is explored in this book with scholarly thoroughness.

Interesting as the origin of names may be to the student for the light they throw on social and other facets of history, it is the making of signs that constitutes their chief interest for the artist, the architect and the craftsman, and in this respect the book is not quite so useful as it might have been. There is a short concluding chapter entitled "Some Notes on the Modern Inn Sign," by Mr. Gerald Millar, which is excellent so far as it goes, but might well have gone further in technical usefulness. However, compensation is found to some extent in the 119 excellent half-tone illustrations of signs included, 104 of which are modern, the remainder being historic. Reproductions of a large number of historic billheads from Sir Ambrose Heal's collection add to the value of the book.

The selection of modern signs, many of which are by well-known artists, some of whom have specialised in this popular form of art, is as varied as it is, on the whole, excellent. Most are painted, but some are three-dimensional, and several include brackets and surrounds of decorative wrought ironwork. One or two are wholly of wrought iron and show that modern craftsmen are capable of doing work as attractive as anything in the past. In the case of some signs, however, the ironwork is too complex, finicky and insubstantial; without frequent painting it would rapidly corrode. A good solid section is essential for all outside ironwork if it is to last without heavy expenditure on upkeep. A particularly ornate sign is that of the "Spread Eagle," Thame, the setting up of which is fully described by that unconventional innkeeper, Mr. John Fothergill, in his entertaining "Diary"; though, while mentioning the names of his several advisers and helpers in this undertaking (including the late H. J. Birnstingl, A.R.I.B.A., who later claimed credit for the "general conception and details"), he says nothing of the artist to whom the work is attributed in this book. Among the painted

* ENGLISH INN SIGNS. A REVISED AND MODERNISED VERSION OF HISTORY OF SIGNBOARDS. By Jacob Larwood and John Camden Hotten, with a chapter on the Modern Inn Sign by Gerald Millar. Pp. 416. (London: Chatto and Windus.) Price 42s.

'THE GREYHOUND," BRIGHTON. By H. Champion and Charles Knight

SIGN for "The Railway Hotel," Edgware, designed by G. Payne

signs, some of the most beautiful are heraldic in character, as, for example, the well-known "Brocket Arms," Ayot St. Lawrence, by E. M. Dinkel, or "The Crawshay Arms," Norwich, by S. L. Webster.

Excellent examples of carved wood signs are those of "The Railway Hotel," Edgware, by G. Payne, and the more familiar "Red Lion," Grantchester, here attributed to Basil Oliver (who was the architect) but actually carved by the late Joseph Armitage. Two signs, "The White Swan," Fleet-street, and "The Cogers," Salisbury Court, Fleet-street, show Lutyens in the unfamiliar rôle of sign-painter (if he really did paint and not merely design them).

In a book such as this, containing thousands of specific references, a few errors and misprints are almost bound to creep in. They may be noted for correction in a later edition. It is stated on page 215 that "The Telegraph," Putney Heath, derives from the name of a coach, whereas, of course, it commemorates the site of a signalling station that in the old days formed a link in the chain of semaphore communication between the Admiralty in London and Portsmouth. Then, on page 234, it is stated that the "Two Pots" at Leatherhead, now demolished, was associated with the notorious Eleanor Rummynge in Skelton's poem, but the connection is with the "Running Horse," which still stands near the bridge over the Mole. On page 47, "von Brauelitz" should presumably read "von Brauchitz," while on page 50 the word "Childe" is spelt with a G. On page 205 Oakham is said to be in Surrey, while pages 210 and 214 claim Wivelsfield and Horsham for the same county. These, however, are trivial errors in a large and excellent work. G. J. H.

COMPETITIONS OPEN

SEASIDE HOTEL, CRAIGAVAD, CO. DOWN.—Promoted by the Festival of Britain (Northern Ireland Committee). Premiums: £200, £100 and £50. Assessor: Mr. Desmond Fitzgerald, B.Arch., A.R.I.B.A., F.R.I.A.I. Conditions from: The Hon. Secretary, Royal Society of Ulster Architects, 7, College-square North, Belfast. Dep. £1 1s. Closing date for designs: March 31, 1951.

RECREATION CENTRE, ENNISKILLEN.—Promoted by the Festival of Britain (Northern Ireland Committee). Premiums: £100, £50 and £25. Assessor: Mr. Desmond Fitzgerald, B.Arch., A.R.I.B.A., F.R.I.A.I. Conditions from: The Hon. Secretary, Royal Society of Ulster Architects, 7, College-square North, Belfast. Dep. £1 1s. Closing date for designs: March 31, 1951.

FESTIVAL HALL, HESWALL, WIRRAL. Promoted by Wirral U.D.C. Premiums: £500, £350 and £250. Assessors: Mr. P. Garland Fairhurst, M.A., F.R.I.B.A. Conditions from: Mr. W. F. Roberts, Clerk of the Council, Council Offices, Heswall, Wirral, Cheshire. Dep. £2 2s. Closing date for designs: April 28, 1951. *January 12 and 26, 1951.*

COVENTRY CATHEDRAL.—Promoted by Coventry Cathedral Reconstruction Committee. Premiums: £2,000, £1,500 and £1,000. Assessors: Sir Percy Thomas, P.P.R.I.B.A.; Mr. Edward Maufe, R.A.; and Mr. Howard Robertson, A.R.A. Conditions from: The Secretary, Coventry Cathedral Reconstruction Committee, 22, Bayley-lane, Coventry. Dep. £2 2s. Closing date for designs: July 20, 1951. *November 3, 1950.*

MARINE AND TECHNICAL COLLEGE BUILDINGS, SOUTH SHIELDS. Promoted by South Shields County Borough. Premiums: £500, £250 and £100. Assessor: Mr. S. W. Milburn, M.B.E., F.R.I.B.A. Conditions from: Mr. Harold Ayrey, Town Clerk Town Hall, South Shields. Dep. £2 2s. Last day for questions: March 21. Closing date for designs: July 21, 1951. *January 19, 1951.*

COLLEGE OF FURTHER EDUCATION, POOLE.—Promoted by Dorset County Council. Premiums: £1,000, £500 and £300. Assessors: Mr. Julian Leathart, F.R.I.B.A., Mr. S. A. W. J. Johnson-Marshall, B.Arch, A.R.I.B.A., Mr. H. E. Matthews, F.R.I.B.A., Mr. J. Haynes, M.A. (County Education Officer), and Mr. H. J. Shelley, O.B.E. (Chief Inspector M. of E.). Conditions from: Clerk to County Council, County Hall, Dorchester, Dorset. Dep. £1 1s. Closing date for designs: September 30, 1951. Last day for questions: April 30. *February 23.*

CORRESPONDENCE

A Question of Professional Conduct

TO THE EDITOR OF *The Builder*

SIR,—At the request of my Council, I forward to you a copy of a letter which has been sent to Mr. Niel Martin-Kaye, F.R.I.B.A., in reply to his communication of March 1, the text of which was published in your issue for March 16.

PEMBROKE WICKS,
Registrar, Architects' Registration Council.

68, Portland-place, W.1.

COPY

DEAR SIR,—In reply to your letter of March 1, I am directed by my Council to inform you that the addition to the Code of Conduct, to which you refer in your letter, prohibiting an architect from soliciting the publication of illustrations or descriptions of his work in the Press for the purpose of increasing his practice, was adopted by my Council after long and careful consideration. It does not prohibit, and is not intended to prohibit, an architect from keeping the Press informed of work on which he is engaged, and it is open to the editor of any paper to publish illustrations and descriptions of buildings or other works if he is of opinion that they are of sufficient public interest. But this must not be used by an architect as an excuse for an organised campaign to secure unpaid publicity. My Council feel sure that responsible architects will appreciate the distinction and will have no difficulty in interpreting the addition to the Code of which you complain.

Further, I am instructed to draw your attention to the opening paragraphs of the Code, in which it is expressly stated that the Code is for the guidance of architects—that the object of the Code is to provide a general standard of professional conduct—that it is not intended to lay down hard and fast lines between what is and what is not legitimate, and that it will be for the Discipline Committee to determine in any particular case whether the architect has been guilty of disgraceful conduct.

Finally, I am to add that as Parliament has entrusted my Council—who represent the whole of the architectural profession—with the duty, through the Discipline Committee, of determining what is disgraceful, that is to say unprofessional conduct, my Council see no reason to accept the view implied in your letter that they have not full authority to amend the Code as and when they consider it necessary.

PEMBROKE WICKS,
Registrar, Architects' Registration Council.

N. Martin-Kaye, Esq., F.R.I.B.A.

The A.B.S. Appeal

TO THE EDITOR OF *The Builder*

SIR,—Reading your issue of Mareh 16 with customary zest, I came across two items of news which at once linked together in my mind. The first was that the total amount received in response to the appeal of the President of the R.I.B.A. for a sum of £50,000, to be devoted to the erection of cottage homes for aged architects under the auspices of the Architects' Benevolent Society, is now £6,595; the second was that the total number of architects now on the register is 16,312. Therefore, if every architect had sent something to the fund, the average contribution would be about 8s. 1d.—not a particularly generous amount. If each had contributed three guineas, the fund would now be over-subscribed.

But the various lists which you have published have shown that although many architects and architectural societies have responded generously, a large number of contributions have come from abroad and from firms and persons outside the architectural profession, many of them being large sums. Obviously, the great majority of architects in this country have ignored the appeal.

Rather more than one-eighth of the sum required has been received, and if contributions continue to arrive as they have during the past three months, the target should be reached in about two years' time. But will it be? Experience shows that those who intend to contribute do so quickly. Receipts tail off rapidly after a short time. It has often been said that architects as a profession do not support their own charities, and it seems to be true. Has the President's appeal for a most deserving object failed?

SPERO.

Association of Merseyside Building Surveyors

TO THE EDITOR OF *The Builder*

SIR,—Some weeks ago you were good enough to publish a letter pointing out the injustice suffered with regard to salaries by persons holding appointments of building surveyors and inspectors to local authorities. The correspondent is to be congratulated in bringing this matter before the public, and it is rather surprising that the gross injustice suffered by the majority of building surveyors and inspectors has not been the subject of earlier correspondence.

Persons holding these appointments usually have had long practical experience in the building trade, and in practically all cases have passed examinations up to the Higher National standard, which is surely the highest possible in building construction, the most necessary subject for anyone holding a supervisory position over building work. In many instances other professional qualifications are held by building inspectors, surveyors or clerks of works, but it is felt that, irrespective of such higher qualifications, persons responsible for supervising building works, which in many towns will reach a value of a quarter to half a million pounds per annum, should be rewarded much more generously than they are at the present time. In many cases the salary scarcely exceeds that of a craftsman, let alone a foreman, and the higher salaries paid to some of the building inspectors compare very unfavourably with other technical appointments to local authorities.

It does not appear to be realised that building owners, ratepayers, architects and engineers rely almost entirely on building inspectors and surveyors and clerks of works to ensure that buildings and other sundry structures are erected and completed in a satisfactory manner. This work has always been of an exacting nature, calling for wide experience of all building trades, knowledge of building regulations and considerable tact in dealing with contractors, etc., but at

the present time, when scarcity of materials has caused the overthrow of the easier but wasteful "rule of thumb" methods of construction, the work has become not only more onerous, but more necessary.

Unless early steps are taken to increase the remuneration offered for these positions, the right type of experienced and qualified persons will be difficult, if not impossible, to recruit, and one trembles to think of the results if these important positions become filled with inexperienced and unqualified persons.

W. G. PEARCE, A.I.A.S.,
Hon. Secretary, Association of Merseyside Building Surveyors,
3, Conway-street, Birkenhead.

"The Builder" Low-cost Housing Competition

TO THE EDITOR OF *The Builder*

SIR,—I would like to congratulate you on the results of the recent competition for under-£1,000 houses. The emphasis has rightly been on the building but sufficient attention is not being paid, I think, to economy in site layout. I doubt whether £158 per house (including cost of land) is sufficient. Most local authorities in constructing a terrace of four houses will provide 6-in. foul and 6-in. storm water drains within the curtilage of the group and make connections from each group to the sewer in the roadway. When it comes to constructing the road, the usual specifications for carriageway include hardcore filling, 6-in. ashes, consolidated 6-in. hard stone and a layer of bituminous macadam on 3-in. tar macadam, stone kerb and 2-ft. flags to footways on 4-in. ashes. All this, no matter how light the traffic.

Local authorities appear altogether too prone to build on sites within their boundaries without regard to disabilities from a housing layout point of view. In fact, instances are known where the cost has worked out at three times the figure allowed in the winning design. Cannot something be done to save *in situ* development?

F.R.I.C.S.

Birmingham.

Operatives' Wages Increase and R.I.B.A. Form of Contract

TO THE EDITOR OF *The Builder*

SIR,—I have followed with interest the correspondence concerning interpretation of Clause 25A of the R.I.B.A. Form of Contract.

I cannot agree with Mr. A. S. House, A.R.I.C.S. (*The Builder*, March 16) that there is an obvious ambiguity in sub-clause 1(b).

Sub-clause 1(a) quite clearly refers to "the rates of wages . . . payable . . . in accordance with the rules or decisions . . . *and current at the date of tender.*"

Sub-clause 1(b) equally clearly, in my opinion, refers to "alterations in the said rules or decisions *made* after the said date of tender," i.e. surely, alterations *effected* after the date of tender, since I infer that although an anticipated alteration may have been decided, with a post-operative date, it is not literally *made* until that date.

In my opinion, a tender could not be correctly based on rates of wages other than those current at the date of tender. Note, I say "rates of wages" and not post-operative "rules or decisions" affecting such rates of wages.

This contention is supported if thought is given to the position of the tenderer, who can hardly be expected to prophesy (especially in the case of local authority work) the probable date of acceptance and commencement of the tender work. It is easy enough to claim that if a known increase is to take place, say, a week after the date of tender, that tender should be based on the increased rates of wages. What of the case, however, where a known stage-increase is to take place in, say, three or four months' time? The tenderer may actually finish the work before the increase takes effect, but on the other hand, he may not even have had his tender accepted until after the increase has taken effect.

No, I think that the intention is clear that the tender is to be based upon the rates of wages actually current at the date of tender, and not upon hypothetical rates of wages which *may* apply at the time of commencing the work.

I suggest that the matter can be made indisputable by an insertion, in the invitation to tender, of a definite instruction to tenderers that they are to include in their tender, or not as the case may be, for a specific known future increase.

RONALD F. LEAR, A.R.I.C.S.

West Hampstead, N.W.6.

Operatives' Wages Increase and Cost of Housing

TO THE EDITOR OF *The Builder*

SIR,—One very important point appears to have been overlooked by Sir Richard Coppock and Mr. Stanley Johnson in their correspondence which has recently taken place in your journal and the daily Press.

The 9 per cent. wages increase (3d. an hour) which has taken place in the last two months is related to the *net* cost of labour. Whatever percentages one takes for labour and material, if these add up to 100 per cent. they must relate to the net cost of the job, a very different thing from the selling price.

On a house selling at £1,400, labour on-costs, plant costs, overheads and profit account for some £190. This leaves £1,210. It is my contention that, on traditional construction, labour accounts for 43 per cent. of this figure and material 57 per cent. These percentages closely approximate to Sir Richard's, and give the net cost of labour as £520. Nine per cent. of this amounts to £46 16s., as opposed to Mr. Johnson's £75 10s. and the National Joint Council's equivalent figure of £30. Their figure of £25 was, I believe, for the March increase only.

Taking a check back on man-hours, based on information supplied in the Girdwood Report, some 3,445 hours would be involved, which, at 3d., gives £43 1s., i.e., within £3 15s. of my figure.

I find it difficult to understand how the National Joint Council can justify their figure of £25 for the increased cost of labour, or how Mr. Johnson could buy his material for £484, namely, 40 per cent. of £1,210. £684 would be nearer the mark.

JOHN A. ROBERSON, A.R.I.C.S.

Beckenham, Kent.

THE PLAQUE which will be attached to the winning entries in the scheme for good design in building and landscaping to mark the Festival year. It has been designed by Mr. H. Wilson Parker

The Case of the Missing "Y"

TO THE EDITOR OF *The Builder*

SIR,—As a keen student of the new writing, where one must learn the meaning of the most complicated combinations of initial letters, e.g.: A.B.S., L.C.C., L.M.B.A., R.A.H., F.M.B., U.S.A., R.I.B.A., B.A.T.C., W.C.I., T.C.—to cull only a few from your issue of March 9, I was extremely interested in your heading in that issue, page 356, which reads: "The A.A. at PLA."

There follows a rather unexpected reference to what "A.A." means, but as is so often the case, there is no explanation of "PLA." Reference to authorities on this new secret code indicates "Port of London Authority."

Hence my amazement in deducing that the Architectural Association visited the Port of London Authority and "proceedings throughout were boisterous, with continuous bursts of laughter or applause. . . ."

One hopes that the A.A. members were not put f.o.b. for U.S.S.R.!

BURTON STIBBON.

221, Finsbury Pavement House, E.C.2.

*** Our correspondent touches us on a sore spot. Like him, we deplore the growing use of initial letters to describe various and august bodies in the building industry. We shall try to amend our ways—when we get extra paper. Until then we must ask Mr. Stibbon to continue to use his faculties of detection which have, we are sure, already deduced that this is the case of the missing "Y."—ED.

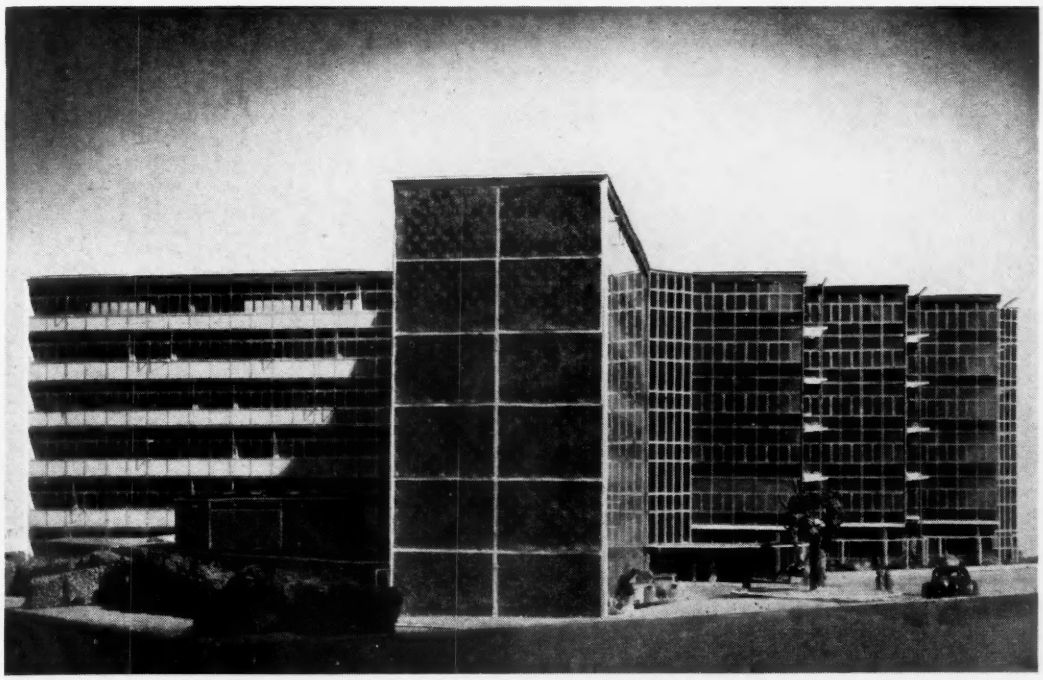
OBITUARY

H. S. Sawyer, M.C., F.R.I.B.A.

We regret to announce the death of Mr. H. S. Sawyer, M.C., F.R.I.B.A., of Winchester, at the age of 67. Mr. Sawyer was articled to Colson, Farrow and Nisbett, FF. and A.R.I.B.A., of London and Winchester, and studied at A.A. Schools. He was with Hants and Kent County Council for ten years, and was later Regional Architect for Midland Counties for the Housing Division, Ministry of Health. Mr. Sawyer began practice in 1925. His awards included National Bronze Medallist, S.K., 1903 (measured drawings).

S. J. B. Stanton, F.R.I.B.A.

The death has occurred of Mr. Stephen James Bridges Stanton, F.R.I.B.A., late of 158, Strand, W.C.2. He was a Freeman of the City of London.



View from the north-western corner

DARTFORD TECHNICAL COLLEGE FOR KENT E.C.

S. H. LOWETH, F.S.A., F.R.I.B.A., KENT COUNTY ARCHITECT

R. T. GREEN, F.R.I.B.A., DEPUTY COUNTY ARCHITECT RESPONSIBLE FOR EDUCATIONAL BUILDINGS

J. H. GARNHAM WRIGHT, A.R.I.B.A., DIP.ARCH., ARCHITECT-IN-CHARGE

THE design for the Technical College to be built at Dartford has been prepared after a careful investigation and analysis of the special requirements of the new type of project which is implied by such regional colleges for further education. A variety of architectural problems is posed by the comprehensive schedule of accommodation, which includes classrooms, lecture rooms, lecture theatres, laboratories, workshops for "heavy" and "light" engineering, drawing-offices, gymnasia, common rooms, committee rooms, an auditorium, a canteen, an exhibition hall and a library. A school of art and a school of domestic science are required as units within the scheme, which will provide for an estimated total of about 4,000 students in day and evening courses.

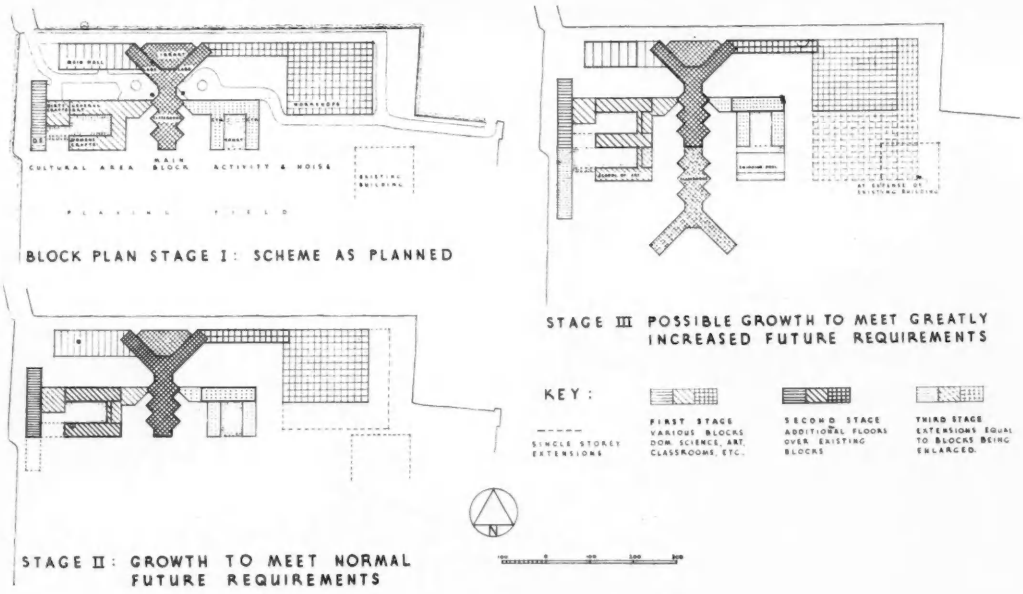
This accommodation is intended to function for the benefit of a variety of persons attending part-time or full-time courses of many kinds. Apart from vocational training, the College will provide for the leisure-time and social activities of a community.

The first instalment of the College forms part of the 1951 building programme, and in view of the shortages of building labour in the region the project could be advanced only upon the understanding that methods of construction would be devised which would involve a minimum demand upon the local labour resources. It was also necessary to include as much accommodation as possible for the amount of expenditure permitted for the first phase. In consequence, the proposals take into consideration the conditions imposed upon contemporary building by restrictions of labour and materials and by the need for economy.

The site.—The College will stand upon the northern side of the spacious playing-fields of a group of existing schools, close by the town centre of Dartford. The open portion of this space will lie to the south of the buildings, as the site for the scheme is restricted to a strip of land approximately 270 ft. wide and extending to an area of about five and a half acres along the northern boundary. The western portion of the strip is high and reasonably flat and commands an extensive view to the south. There is a point of entry at each end of the site. These two points are of equal importance so far as the volume of traffic of students to the College is concerned, but the two approaches vary in character. The roads to the entry at the eastern end are short and narrow, and the roads at the western end are more commodious.

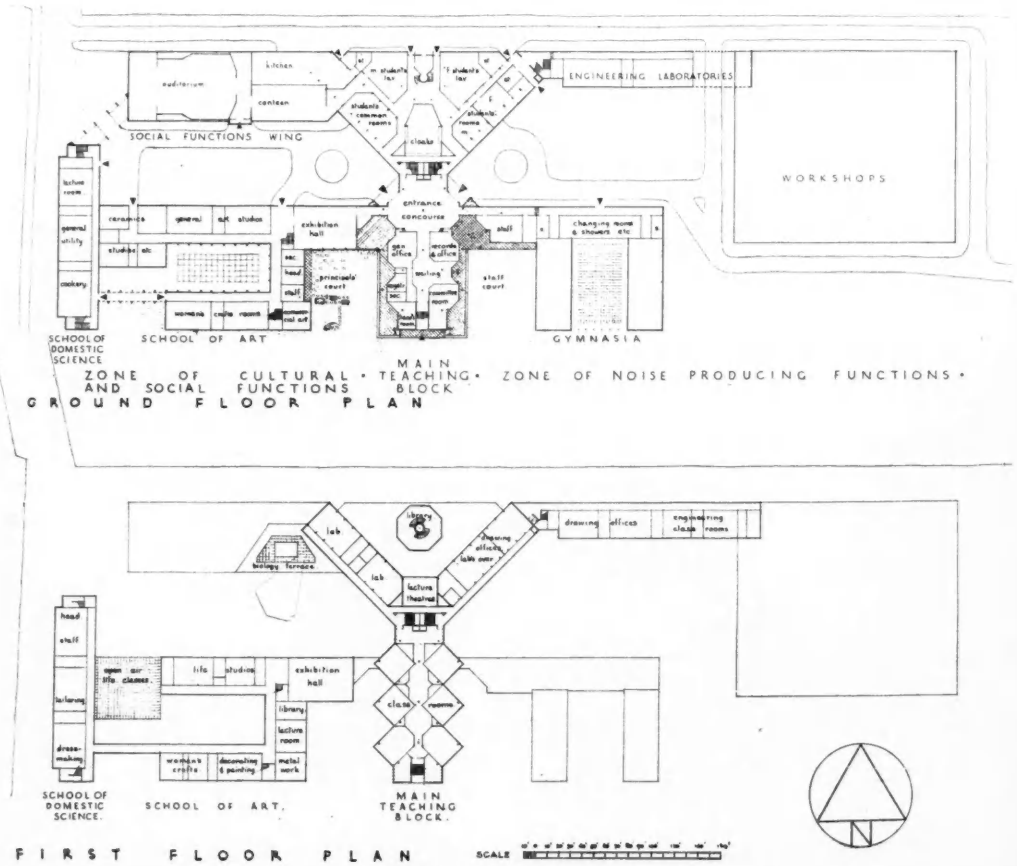
General planning problems.—The layout plan has been influenced by two overriding requirements: first the need for flexibility; and, second, the provision for general future extension. Furthermore, the College is to be built in stages and so two types of extensions are implied, the normal additions which are required to complete the scheme following the first phase, and the possible future extensions to the whole project. The research showed that the accommodation tends to require the formation of zones with different conditions, and in consequence one of the main problems has been to secure planning unity initially, in such a way that the unity of the whole scheme may be maintained at all stages of growth.

Apart from the problem of two main entries at opposite ends, the site imposed a further difficulty concerning the arrangement of the buildings. It was considered that the plan should have an orientation which secures appropriate day-time aspects, as an analysis showed that with evening classes terminating in July the total number of hours during which the College will be used for instruction may be divided into 72 per cent. for daylight hours and 28 per cent. for hours of dusk or darkness. The proximity of houses on the northern boundary makes undesirable the location of high

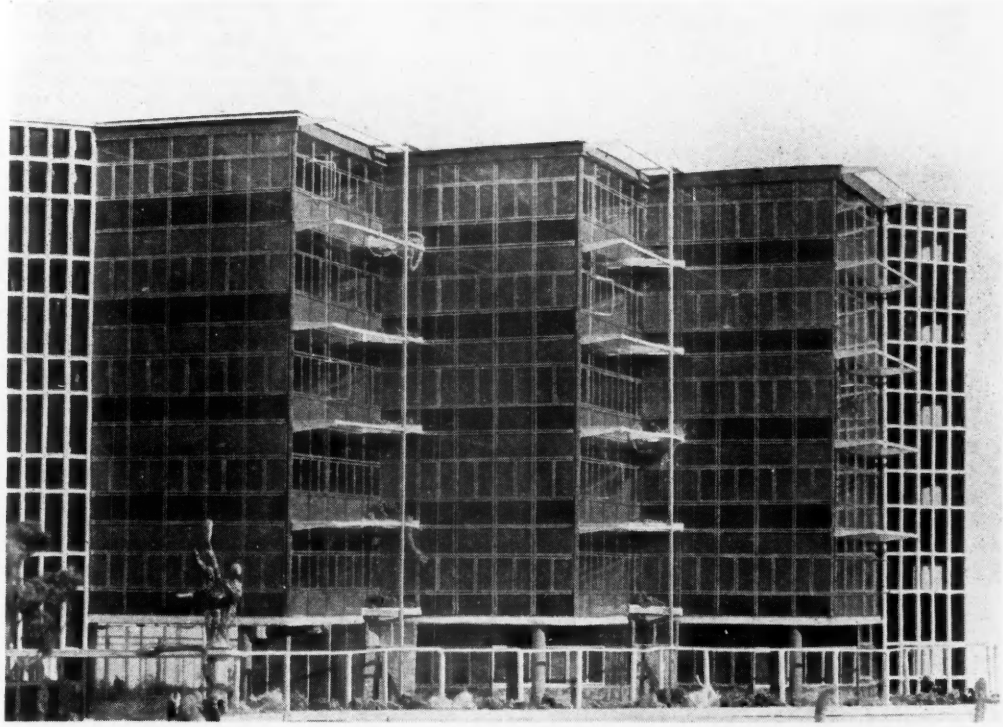

BLOCK PLAN STAGE I: SCHEME AS PLANNED
STAGE III POSSIBLE GROWTH TO MEET GREATLY INCREASED FUTURE REQUIREMENTS
KEY:
SINGLE STOREY EXTENSIONS
FIRST STAGE VARIOUS BLOCKS DOM. SCIENCE, ART, CLASSROOMS, ETC.
SECOND STAGE ADDITIONAL FLOORS OVER EXISTING BLOCKS
THIRD STAGE EXTENSIONS EQUAL TO BLOCKS BEING ENLARGED.
STAGE II: GROWTH TO MEET NORMAL FUTURE REQUIREMENTS

blocks of buildings in the positions implied by the needs of orientation, the extent of the accommodation and the shape of the site (that is to say, in an east-west direction).

The general layout plan.—These considerations have resulted in the provision of a Y-shaped main building of six floors. The first instalment of the College will consist of four floors of this block, which can be extended ultimately to a height of eight floors. The teaching rooms are planned on a double-banking system in the southward stem of the Y, and suites of laboratories and practical rooms are contained



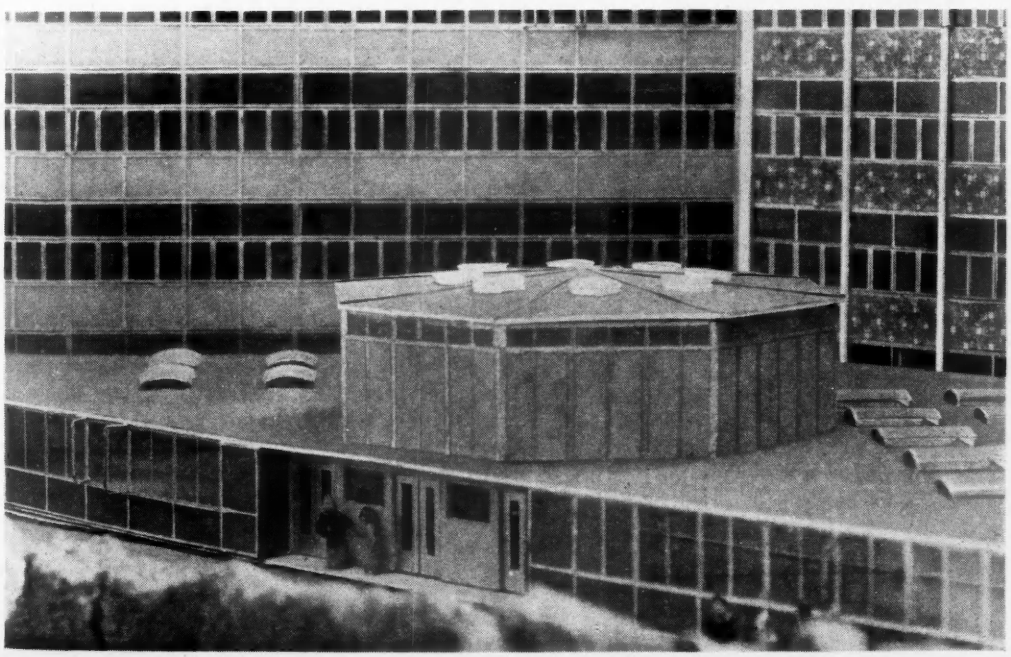
Detailed plans of Stage I



View of the classroom wing from the west

in the other arms. The orientation of the block is arranged to avoid any reduction of amenities for the houses on the northern boundary, while securing the aspects required for the various rooms. This building, which is the core of the scheme, is in a commanding position in the centre of the site, and is equally accessible from the two main points of entry. Its location economises site space and divides the area for the whole scheme into two parts or zones in which the other accommodation is planned, according to the various requirements. In this way the two approaches to the main block retain an equal importance but differ in character.

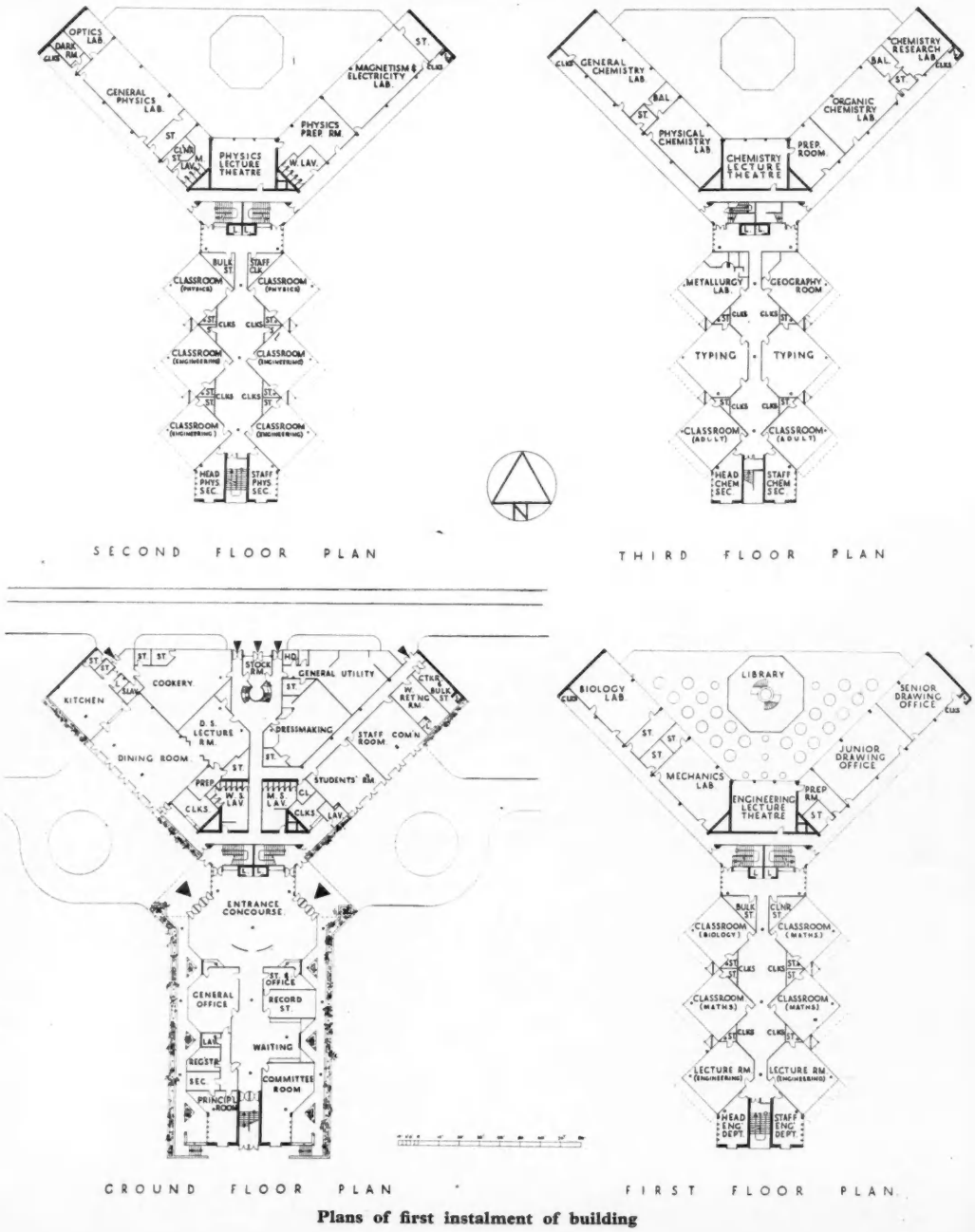
Certain sections of the College which may be expected to produce a general noise during normal use are grouped into the area on the eastern side of the main building. The



View from the north, showing the library, laboratories and domestic science accommodation

accommodation in this zone includes workshops, " heavy " laboratories and gymnasia. The workshops, which require factory-like conditions, including roof lighting, are located at the lower end of the site, occupying a large area and losing nothing by reason of the lack of view, which is a characteristic of this position. Service roads to these workshops are conveniently connected to main supply routes in the district. The gymnasia are planned adjacent to the playing-fields, and are arranged to include a court which is open only to the south.

The school of art, the school of domestic science and the accommodation which may be shared by all the sections of the College and by the general public are sited on the western side of the main building. The planning imparts a special character to this area, which will contain the exhibition hall and other buildings for the art courses, the accommodation for courses which cater mainly for women students, and the " social functions " wing, consisting of an auditorium, a canteen and a suite of common rooms. These rooms, which may be used for dances and social functions, are planned in relation to courts and lawns suitable for musical festivals and summer fêtes, where the shelter of the main building on the north and east and the incidence of evening sunshine from the west will be an attractive advantage. The zone is related to the western entrance to the site, and the buildings are grouped to form a court from which access is obtained to all the sections of the College located in this area. This entrance court is designed to have the nature of the traditional university " quad." It is secluded, though considerable in its size, and is dominated by the entrance to the main block at one end. Courts of a more intimate character are contained within the adjacent build-

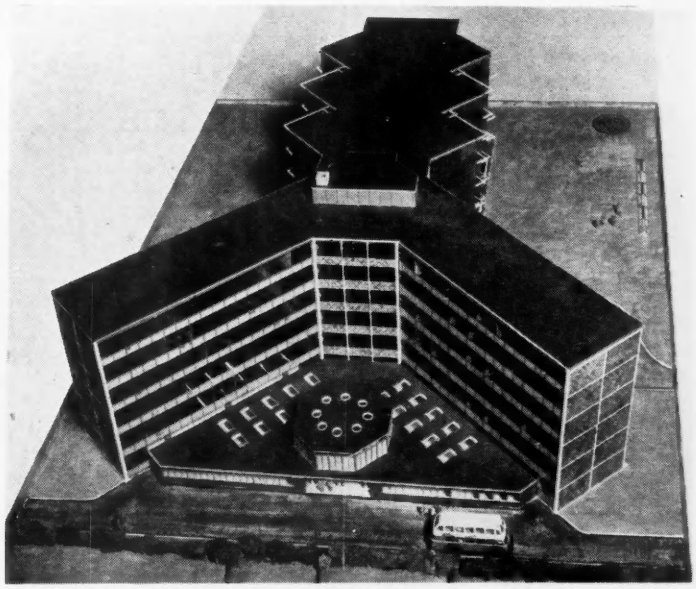


Plans of first instalment of building

ings to the south of the main court. The entrance concourse in the main building is thus at the heart of the scheme, approached by site roads, which pass through the two zones.

Future extensions.—The formation of different teaching spaces within the buildings is made possible by special arrangements, but apart from these provisions the general layout of the plan facilitates the process of normal growth in prescribed stages. Each section of the College may be extended by approximately one-third of its initial size by the provision of additional floors. In this manner the balance of the present arrangement of the sections within the College is maintained at each phase. It is not unlikely that drastic future extension may be required, and in this event, the accommodation could be doubled by further encroachment upon the playing fields to the south. These various extensions may be made without any loss of the initial unity of the project, and the desirable aspect and prospect is retained in each case.

The first instalment.—It was not required that the first phase should include the provision of a portion of each type of accommodation. Workshops, "heavy" laboratories and gymnasia were not included, but it was necessary for some courses which will not always be housed in the main teaching block to be accommodated. One of the main design problems lay in this need for the first instalment to be an education entity in its own right, coupled with the need for the architectural self-sufficiency of each phase of the building.

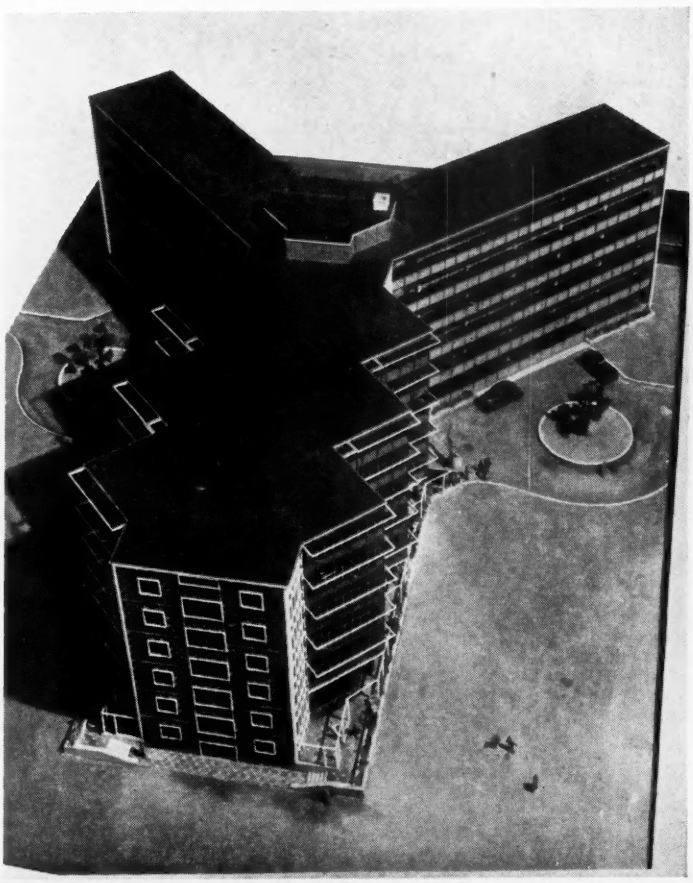


Plan view from the north

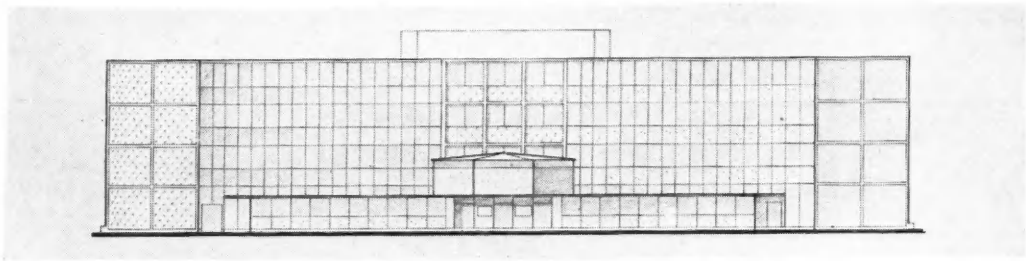
In view of the limited resources available for this first stage of the project, it was very desirable that some means should be discovered whereby as many of the various courses, both vocational and cultural, and suiting the needs of general and specialist training for many sections of the population, should have some provision within the premises. The principle of multiple use of rooms is particularly applicable to classroom accommodation.

In consequence, the first instalment comprises four floors of the main teaching block. This building consists of common rooms and administration on the ground floor, and each floor above is arranged as a suite of laboratories or practical rooms, with related groups of classrooms and study rooms or staff offices. On each floor a lecture theatre is planned at the centre of the suite. While the classrooms are associated with the laboratories for normal courses, they also form a pool of teaching accommodation which may be used for various courses according to the fluctuating demands of part-time education.

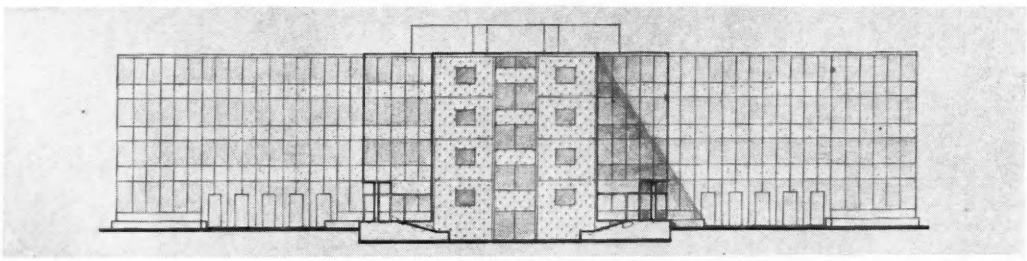
Laboratories and other practical rooms are contained in two compact wings on the northern side of the central circulation space, and a lecture theatre is placed at this junction of the wings on each floor. In this way the lecture theatre most suitably serves the laboratories and classrooms related to it, and being close to the central vertical circulation is conveniently accessible for the public use. Within the laboratories all available space beneath the working bench tops is utilised as storage space. All transverse walls in the laboratories are demountable and equipment is movable. The rooms in the laboratory wings are given two-directional lighting, but the main lighting is from the north. Sunlight, while not necessarily excluded, may be controlled in relation to the working benches. Double banking has not been considered as a desirable method of planning for these wings, but the length of each wing has been restricted in order that the length and width of the circulation spaces may be minimised in the interests of economy. Cloakroom space for the two main rooms in each wing are sited at the end of this space.



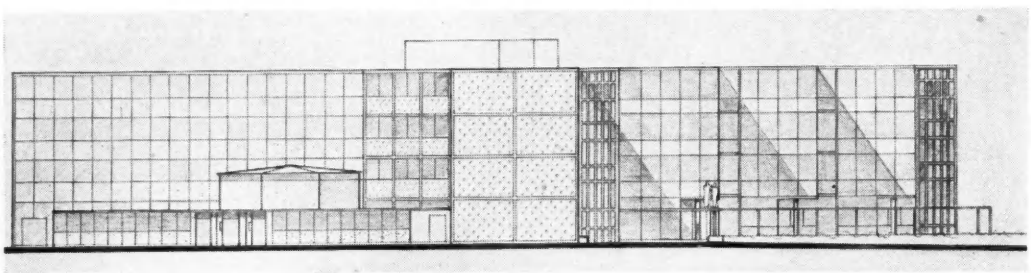
Plan view from the south



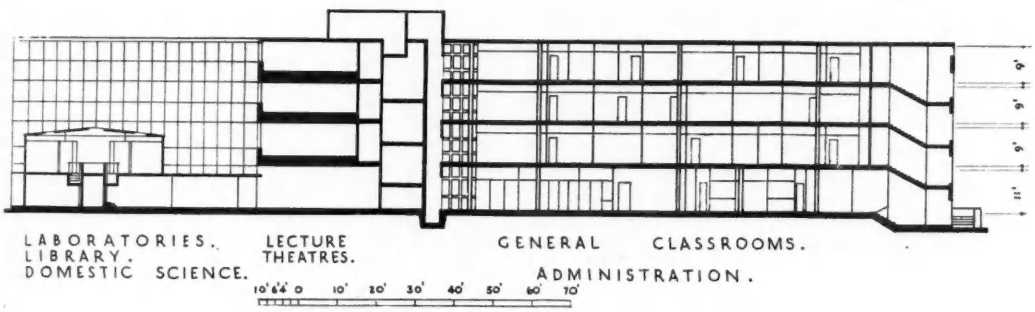
North elevation



South elevation



North-west elevation



Section through north-south axis

The services are housed in horizontal ducts arranged to permit alterations in laboratory layouts. Horizontal service ducts are connected to the two main vertical ducts at the junction of the wings.

The particular needs of the classroom wing were considered at length in the evolution of the plan-form. These requirements included cloak spaces adjacent to teaching rooms, short circulation connections with practical rooms to ensure ease of communication, correct standards of daylight and ventilation related to the use of the double-banked system, and a suitable degree of flexibility. A survey of the factors attributing to planning compactness in the interests of economy showed that certain principles may be established. For any plan-shape a given length of external walling may be arranged in a number of ways to enclose areas of various sizes. The choice of an arrangement which gives the minimum area will, of course, ensure the reduction of the volume of the building. Further, if these external walls can be arranged to increase the efficiency of daylight penetration, it is possible to effect the required standards of lighting by day with a reduction of height between floor and ceiling.

If this arrangement is allied to a plan of minimum area, a further reduction of volume is achieved. These factors are illustrated by the plan-form adopted, which has added advantages connected with flexibility. The classroom wing is planned on the double-banked system for economy of circulation areas, but is arranged to secure adequate natural lighting with minimum volumes, and to secure the greatest flexibility of room arrangement. The method adopted has regard for the practice of part-time students of taking their coats and hats with them into classrooms. Cloak spaces are provided adjacent to each classroom, and it is intended that any increase in the size of teaching rooms will be accompanied by

TYPICAL FLOOR PLAN.

SOME OF THE POSSIBLE ALTERNATIVE PLANS FOR THE CLASSROOM WING.

he development of the cloakrooms on the ground floor as compact storage units under proper control. In the meantime, circulation space normally enclosed within cloakrooms is shared with the main circulation route, and the spaces thus formed within the classroom wing serve two conflicting demands: on the one hand, the need for compact circulation areas, and on the other hand the need for adequate spaces outside classrooms for the general orderly inter-period movement of young people during day classes. The classrooms are screened acoustically from any noise-incidence in the practical rooms, and the sound insulation between classrooms is of a high standard. The south-eastern and south-western walls in the classrooms are fitted with clear glazing, and a distance view is obtained from each room. The number of opening units is kept to the minimum required to give the appropriate rate of air-change. Fixed ventilation units are used. The glass is protected from the sun by a system of extendable "brise-soleil" members. Northward facing glazing is fixed and obscured and is designed to obtain suitable standards of thermal insulation.

An adequate daylight factor is obtained at all points within the classrooms with a height of nine feet between floor and ceiling. With this maintenance of optimum conditions the volume of each floor is reduced from the volume which would be necessary with rooms placed parallel along a central corridor, and there is no increase in the area of external walling. At the same time, considerable flexibility is attained and there is a saving in materials and cost.

In view of the implications of the flexibility, the internal partition walls have been designed to secure demountability with the greatest ease and simplicity. To this end, the first task was to calculate a panel-module whose length would be suitable for the production of any of the variations of the plan. Secondly, it was necessary to consider the materials and jointing methods for the panels themselves having regard for the properties of lighting, acoustics and insulation, and finally a method of arrangements was devised so that the partition units may be rearranged without the danger of misfitting.

The partitions are formed of panel units built to a selected standard size, and special connecting posts are used at all positions where the junctions of units are not at right angles on plan. Provided that these special members are placed at these angular junctions, the panels can be arranged to fit together in any of the prescribed positions. The system provides for a number of plan variations, while maintaining simplicity in the actual methods of operation. (See p. 451.)

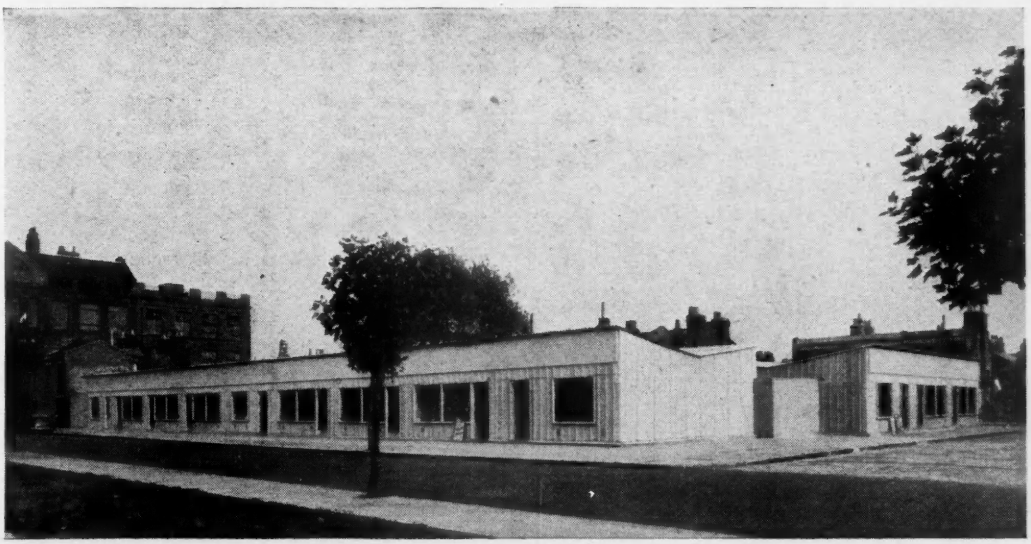
Construction.—The deficiency of building labour in the region and the shortages of materials are factors which have determined the constructional design. The methods entail as much prefabrication as possible, so that the demands upon local building labour may be reduced. A system of "curtain" walling has been devised to this end. The design of floors and ceilings has been influenced by the need to create voids for the movement of services, as required by the planning flexibility. The need for this accessible void within the floor structure has also brought about a re-examination of the problem of the fire protection of the main structure.

The structural framework has been designed to conform with certain governing factors; for instance prefabrication and speedy methods of erection are necessary; the use of steel must be economical and wet construction minimised; the building must be capable of extension by additional storeys in three phases; the shape of the building, particularly the classroom wing, implies certain stipulations as to the choice of main spans, and the size of and positioning of columns; a spacious void in the structural floor is necessary for manoeuvrability of services. In consequence, structural steelwork has been chosen for the main framework. The spacing of stanchions is maintained at 25 ft. for main spans, with certain arrangements for cantilevering in all wings. The central stanchions in the classroom wing are specially designed to have a suitably compact plan-shape. All connections between stanchions and beams are made within the floor void. Main beams are castellated steel joists, and the floors are constructed with precast prestressed reinforced concrete beams, made to a standard length for all positions, and supported on the bottom flange of the main steel beams. The castellated beams give a reduction in the weight of steel of approximately 25 per cent. and the prestressed precast members reduce the weight of the floor by a similar extent in comparison with other methods.

DARTFORD TECHNICAL COLLEGE: south-eastern entrance

Ceilings and floors are formed on precast units which act as fire-resisting membranes protecting all structure in the floor void. A general space five inches deep is available for movement of services in any direction within the floor, while in the direction of the prestressed beams a depth of 12 in. is available. The ceiling panels have appropriate acoustical properties, and the flooring units are arranged to reduce structure-borne sound. In the laboratory wings the outer wall and the floor of the corridor are supported on each floor on a special triangular cantilever bracket of steelwork. This avoids the use of a double row of columns and provides a duct space for services, while preserving certain requirements connected with day-light factors within the laboratories.

External walls are formed of panels fixed in metal framing, and end walls to the main wings of the buildings are composed of precast concrete blocks cast in two moulds. The blocks are cast in two shapes, one kind being octagonal with a finish of exposed aggregate, and the other kind being square with a smooth face. Certain other portions of the external walling will be formed in precast concrete mullions. The use of colour on internal and external surfaces has been considered carefully.

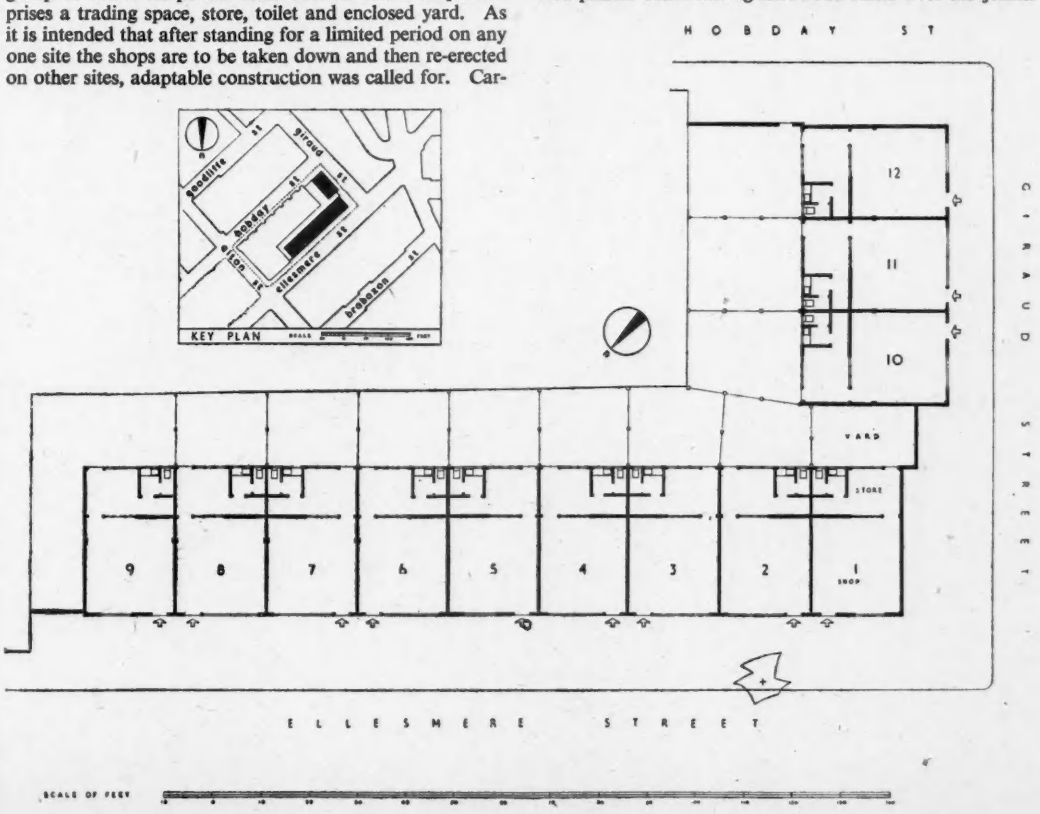


Completed scheme comprising 12 temporary shops at Neighbourhood 9, Poplar. *Below :* **Plan**

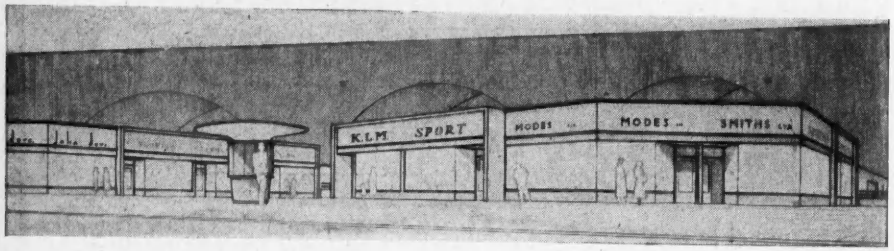
SHOPS—TEMPORARY AND PERMANENT—FOR THE L.C.C.

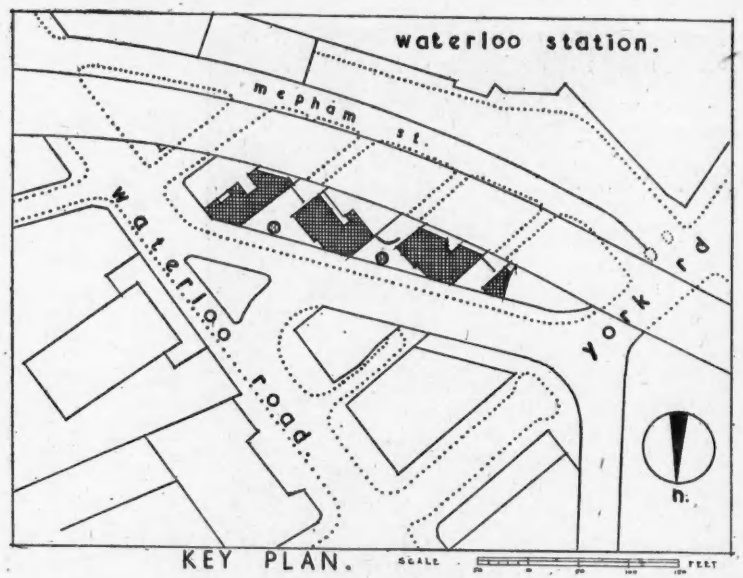
SCHEMES BY GENERAL DIVISION, L.C.C. ARCHITECT'S DEPARTMENT ROBERT H. MATTHEW, A.R.I.B.A., ARCHITECT TO THE COUNCIL

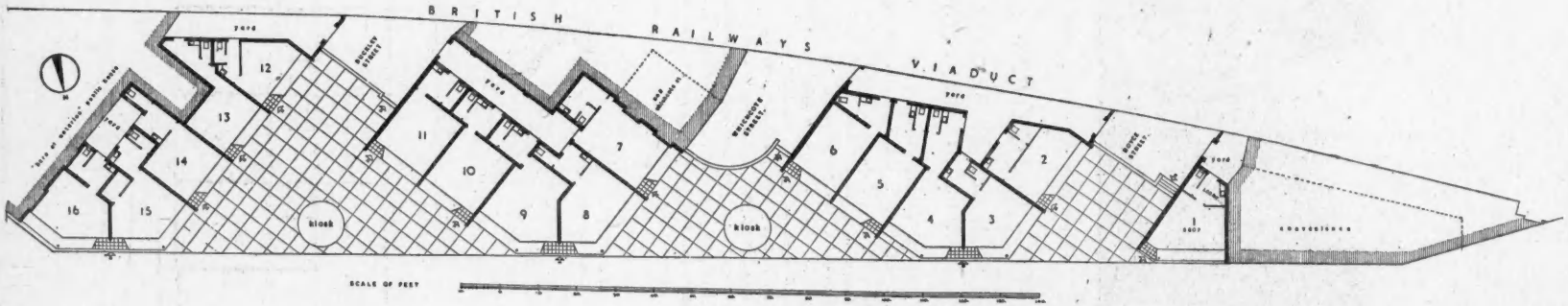
AMONG the old property to be pulled down to make way for the Live Architecture Exhibition at Poplar was a number of small shops. The L.C.C. decided that, before these shops were demolished, temporary accommodation for the displaced shopkeepers on bombed sites outside the exhibition area was to be arranged. One such site is at the corner of Ellesmere-street and Giraud-street, and here a group of twelve shops has been erected. Each shop comprises a trading space, store, toilet and enclosed yard. As it is intended that after standing for a limited period on any one site the shops are to be taken down and then re-erected on other sites, adaptable construction was called for. Carcassing and partitioning throughout, therefore, consists of 3 in. by 2 in. timber studding framed into panels about 4 ft. wide which are bolted together. Lattice beams, made up out of 3 in. by 1 in. boarding, carry roof loads ; these beams are bolted in position. External cladding is asbestos cement. Trafford tiles and Big Six corrugated asbestos cement sheets were used on the roof. The inside was lined with plaster board having hardwood fillets over the joints.



IT was realised that the recently opened south-east spur of the new York-road/Waterloo-road roundabout, near the South Bank site, would expose an unsightly, narrow strip of land between the pavement and the British Railway Viaduct. To improve the amenities, and at the same time meet a practical need, the L.C.C. decided to build on this land blocks of single-storey shops in permanent construction. It is considered that the shops, at present being built, might have a life of about 21 years. The overall plan form of the shops was determined by a statutory request to keep open for foot traffic the three existing streets leading from Mepham-street to the new spur. This restriction has resulted in the formation of three isolated blocks, each containing five single shops ; an additional single shop is planned next to the adjoining property at the York-road end of the spur. By closing the three existing streets to through vehicular traffic an opportunity was presented of forming generous paved forecourts to the shops. A kiosk will be erected on each of the two main forecourts. Besides a trading space each shop has a lobby and toilet, and there is a common yard to each block. Construction : brick walls on concrete raft foundation, patent precast concrete roof, concrete hoods, golden-brown concrete facing bricks.







Plan of permanent shops scheme at York-road/Waterloo-road roundabout. *Above left :* **Drawing of shops and kiosk**

SOLVING THE GREEK HOUSING PROBLEM

American Aid for Self-Sheltering Plan

[From a Correspondent]

GREECE'S acute housing shortage is being solved through a unique self-sheltering plan involving Marshall Plan dollars, Greek Government administration, and the muscle and ingenuity of Greek home builders. The Greek people themselves are doing the carpentry and masonry work on thousands of small houses with funds totalling over 21 m. dollars in E.C.A. funds distributed in the form of materials and cash by the Greek Ministry of Housing and Reconstruction.

Villagers helping each other on heavy construction work at Nipsa. In the background new houses can be seen in various stages of completion

More than 900 villages are participating in the new programme. Some are being reconstructed on their old sites, but in many cases entire new villages are being rebuilt on new, more convenient and healthier land.

One of these is the small village of Nipsa, situated in the eastern extremities of the Rhodope Mountains between Greece and Bulgaria, which was moved five kilometres south of its old site. The village's 700 inhabitants, comprising 128 families—mainly Greeks from the Black Sea coast of Turkey who came to Greece in 1922 in a population exchange—are farmers, woodcutters and charcoal burners. About 20 families are nomadic Sarakatsanaii, colourfully costumed sheep and cattle drovers.

Nipsa is being erected according to specifications and plans drafted by Miss Maria Miliotou, an employee of the Greek Ministry of Housing and Reconstruction. Miss Miliotou, a graduate of the Technical University of Athens, is one of four women architect-engineers who have been sent into the rural districts by the Ministry to help carry out the self-sheltering plan.

New Village Planned

Miss Miliotou's plan for the new Nipsa village, which has pleased the inhabitants, divided the land chosen for the site into lots of 400 square metres for each family's house. She left a large area at the north-western end of the village for a spacious village square. Her draft provided ample ground for the village's most important buildings, the school, the church and a town hall, just north-east and facing the village square. She designated the rest of the lots around the square for public market and utilities buildings in the traditional Greek village style.

Guerrilla fighting, looting and destruction have plagued Nipsa since its founding. Nipsa was the first area occupied by Bulgarian troops when Greece was invaded in World War II. Then came the Germans. When the Nazis retreated in 1944, the unarmed villagers were at the mercy of Communist guerrillas. On January 26, 1947, the Communists killed 20 of Nipsa's inhabitants and all but destroyed the village. Only eight of 130 houses remained standing, and they were badly damaged.

Under the self-sheltering plan the Greek Government furnishes scarce building materials for the reconstruction of destroyed or damaged homes, and cash payments are made to pay for materials not locally available or to hire skilled labour.

None of the houses has interior plastering, and some have clay floors. Wooden floors will be installed later, but now bare living space is considered more important.

Only those who owned houses which were destroyed are entitled to receive aid under the self-sheltering plan. Thus many of the Sarakatsanaii families, who habitually live in brush and reed huts when not roaming the country with their livestock, are excluded. However, these nomads have moved along with the rest of the population to the new village site. Most of the men are not interested in a permanent home, but some of the women gaze wistfully at the new houses.

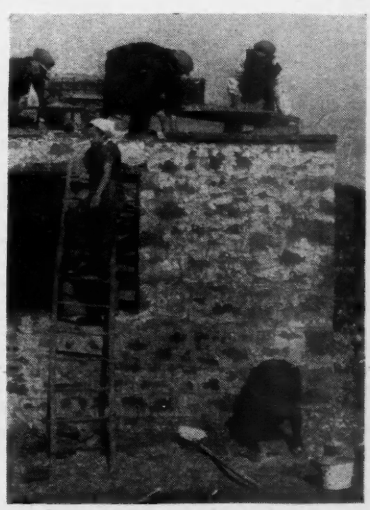
Huge Housing Deficiency

Housing like that in Nipsa is going up all over Northern Greece. The self-sheltering plan is a good start toward relieving the country's pressing housing situation, but there still remains a great need for housing. Greece lost approximately 300,000 houses, mostly in rural districts, during World War II. A like number was destroyed during the Communist bandit war, with the result that the country was faced, at the end of 1949, with a shortage of 600,000 houses. The ravages of war made even more desperate the housing shortage growing out of a population increase of more than 1,000,000 during the last decade, when no new homes were built.

During the summer of 1950, the Greek Government and the E.C.A. Mission decided to put all available finances from the refugee programme and also the normal housing programme into a common fund. The entire amount was earmarked for Northern Greece, where destruction from guerrilla warfare was greatest. Thus began the self-sheltering plan, which has provided minimum dwelling facilities for 160,000 of Greece's 600,000 homeless families.

With Marshall Plan help, Greece has accomplished much in the field of housing, but a huge task still lies ahead. To meet this need, new housing legislation is being drafted, and a housing loan programme is under study.

The village "president" of Nipsa (*left*) and the district engineer examine a prefabricated window frame



Entire families, including women and children, are helping in the work of rebuilding their homes

DEVELOPMENT OF OUTDOOR ADVERTISING

By J. L. BERBIERS, A.R.I.B.A.

BEFORE the start of the nineteenth century outdoor advertising was largely controlled by the limited methods of reproduction available and by the difficulties of transportation and communication (which meant that the inhabitants of outlying districts were unable to obtain the advertised products), as well as by the inability of many to read. The origin of outdoor advertising is to be found in the early wall paintings in Egyptian temples and in the mosaic decorations of Byzantine churches, where the basic principles of commercial art were exemplified in a simplicity of form and the use of flat surfaces of striking colours.

Many of these early advertisements were inscribed upon whitewashed walls and wooden boards, or upon the four faces of a kind of rotating square column. The Romans, who employed outdoor advertising for gladiatorial events, auction sales, absconded debtors, and other matters, displayed their notices upon walls which were divided into panels by pilasters.

After the close of the Roman era there was comparatively little development in the sphere of commercial publicity until the latter years of the Middle Ages, when painted or sculptured sign-boards became more numerous over the fronts of shops and inns. These projecting signs, announcing as they did in a graphical manner the kind of wares offered for sale, or the activities that were carried on, largely compensated for the loss of display windows resulting from a concentrated type of development along narrow streets.

Indication of Trade

Some of these signs became identified with particular trades, as, for instance, the bush which indicated a tavern, and the three balls, a pawnbroker; whilst others, like the sign of the cross or the sun and the moon (for religious purposes), were derived from their various origins. Occasionally, a merchant would illustrate his name by a rebus or his activities by a characteristic object of the trade. The employment of signs was usually optional, although publicans were legally obliged, even in the seventeenth century, to display signs outside their establishments. During the sixteenth and seventeenth centuries considerable skill was shown in the designs and execution of the supporting brackets which were elaborately worked in wrought iron. By the middle of the eighteenth century the number of projecting signboards had increased to such a large extent, both in size and number, as to constitute a danger to passers-by, and a law was consequently enacted in both France and England obliging tradesmen to arrange their signs flat against their walls.

Meanwhile, during the sixteenth and seventeenth centuries greater use was being made of the poster for public announcements and proclamations, in the form of both letterpress and illustration, although the latter was confined to the use of engravings and woodcuts. Frequently the illustrative matter consisted only of the Royal Arms.

According to Brewer's Dictionary of Phrase and Fable, before the Fire of London the rails and posts which protected foot passengers in the streets were used for affixing theatrical and other announcements; hence the origin of the word "poster." These were broadsheets or hand-bills rather than the present-day type of poster, and were intended to serve as both an *affiche* and a distributive circular or theatre programme. Such hand-bills were employed by troupes of acrobats and even by sales people. There is a case on record of a haberdasher issuing hand-bills with his wares and prices as early as 1679.

Increased Demand

In the early years of the nineteenth century progress was made in the production and employment of posters as a means of outdoor advertising. This was largely brought about by the invention of lithography, by improvements in transportation and communication which facilitated the distribution of advertised goods to outlying districts, and by advancements in the standard of education which increased the proportion of the population who were able to read. Allied to these factors was the increased demand for outdoor advertisements by both traders and manufacturers.

In 1867, Jules Cheret, a French lithographer who was trained in England, exploited the new process of lithography in a series of brilliant pictorial posters which he produced with the three primary colours. Poster art first attained its climax in France during the second half of the nineteenth century when artists like Henri de Toulouse-Lautrec and T. A. Steinlen created bold posters designed with a minimum of detail in large masses of flat colours. Although the majority of the early posters in England were based upon reproductions of paintings by Royal Academicians, an outstanding example of correct poster technique, in which the lettering formed an essential part of the composition, was designed by Frederick Walker, in 1871, to advertise *The Woman in White* at the Olympic Theatre. More widespread improvements in the design of English posters occurred towards the end of the century, when original and effective designs were produced by the Beggarstaff Brothers (James Pryde and William Nicholson), Aubrey Beardsley, Dudley Hardy and Maurice Greiffenhagen.

Although it might be claimed that the advertising hoarding had an origin in the wooden boards upon which the Greeks inscribed their public announcements, or, during a later period, in the public notice boards which were used for proclamations and official announcements, it was not until the nineteenth century that the true advertising hoarding first made its appearance. In France, during the 'eighties and 'nineties, the hoardings of the Parisian boulevards developed into veritable display galleries upon which were shown posters by leading designers of the day. In England, rapid progress was made in the method of displaying posters, from the days when flyposting was the prevailing condition and billstickers covered all available wall space (and even the work of rivals) with advertisements, to the time when advertising contractors began renting specially protected stations.

About 1860, Edward Sheldon, of Leeds, inaugurated the practice of renting sites for the display of posters. This new procedure, which soon developed into the formation of advertisement contractors who acquired the exclusive right to display posters on particular properties, severely curtailed the activities of the casual billsticker. In spite of this early improvement, which resulted in the erection of proper hoardings rather than the use of any available material, such as old doors or other articles, for display purposes, continued efforts were made to control the erection of poster hoardings.

During the early years of the present century, the scope of outdoor publicity increased considerably (due largely to the advent of the motor-car), but no effort was made to improve the design of hoardings, or to incorporate the advertisement as an element of colour and form in the urban landscape.

Major steps towards the control of advertisements were taken in 1907 by the Public Health Acts Amendment Act (which related to sky-signs), by the Advertisements Regulation Acts of 1907 and 1925, under which bye-laws could be made by local authorities, and by the provisions of the Town and Country Planning Act, 1932. All previous advertisement legislation was, however, repealed by the Town and Country Planning Act, 1947, under which regulations have now been issued.

Although the 1947 Act and its attendant regulations provide a valuable safeguard against the indiscriminate disfigurement of town and country, its contribution to the visual aspect of planning is essentially of a negative or restrictive nature. To be successful, advertisement control must be exercised with discretion and must extend beyond the range of statutory regulations.

Points for Consideration

It is, accordingly, suggested that the following points should be considered in the design and location of future advertisements:—

(a) Posters and other forms of publicity must be bold in design if they are to form an integral part of the street composition. Refinement and subtlety in the individual poster are of less importance than "punch" and clarity.

(b) Posters or signs which are employed on façades of buildings must form an essential part of their visual pattern. To assist in this matter, the use of heavy and conspicuous frames around such advertisements should be avoided.

(c) A major defect of contemporary advertising is the large hoarding, with its vast display of posters, many of which are individually attractive, but which elbow and neutralise one another when seen together. The pictorial merits of the individual poster should be emphasised by a more selective method of display.

(d) Greater thought might be given to methods of display other than the hoarding. The Continental arrangement, whereby advertisements are displayed upon circular or square columns, both limits the number of posters which are seen from any standpoint in the street and presents a three-dimensional object which is visually more interesting than the flat, barrier-like hoarding.

(e) The architectural character of a civic centre or the precinct of a church must not be violated by commercial advertising. Advertisements should be confined to commercial and entertainment centres where their pictorial qualities do not conflict with the architectural scheme.

THE HEATING AND VENTILATION OF HOUSES

Lecture before the Royal Institute of Public Health and Hygiene

THE problems involved in the heating and ventilation of houses had a direct bearing on health, said MR. G. D. NASH, A.R.I.B.A., when he spoke at the Royal Institute of Public Health and Hygiene at 28, Portland-place, W.1, on March 14. Mr. B. S. Townroe, Hon. A.R.I.B.A., was in the chair.

Pointing out that he himself had no medical qualifications, Mr. Nash said that other lectures in this series which were being given by the Institute would be delivered by medical men. Man was a warm-blooded animal, he said, whose temperature was normally 98 degrees F. or 99 deg. F.

In his home, man found conditions of temperature different from those of his own body, and supposing for instance the temperature of things around him was 65 degrees F., the tendency was for heat to leave his body and flow to his surroundings. Heat could be transferred from one object to another by three methods. First there was conduction: if you heated a metal bar at one end the heat travelled to the other end also. Secondly there was convection: air or any other gas would take up heat, expand, rise and carry the heat away. The same thing happened to liquids: thus the hot water in the boiler flowed away to the hot-water tank. The third method by which heat was transferred was by radiation: by this, heat could be transferred from a warm body to a cold one without the aid of any solid, liquid or gaseous medium. Examples of how these methods of heat transference affected the human being were, first, if you sat on a cold slab of marble you lost heat by its conduction to the surface of the marble. Second, as to convection, the air surrounding a fireplace became heated, rose and circulated about the room carrying heat with it. Third, as to radiation, the human being when surrounded by walls, ceiling, furniture, fittings, etc., at a lower temperature than his body tended to lose heat by radiation to these cooler surfaces. Besides these methods the human being lost heat by breathing and by evaporation from the skin. Altogether there was a very complicated system of heat adjustment in the human body and each of us tended to give up approximately 400 B.Th.U's per hour. Under cold conditions the heat production rate could be stimulated by the oxidation of foodstuff in the human body and the body system restricted the flow of blood to the surface and thus limited the rate of heat loss. It was not easy to define precisely the optimum conditions for comfort. The four things which governed it were, first the air temperature of the room, secondly the rate of air movement, thirdly the radiation from the body to colder surroundings, and fourthly humidity.

Under normal conditions in this country humidity did not come very much into play, but in the tropics it made a difference. The way heat was distributed throughout the room was important. If the heating system made the air rise so that the hottest part of the room was just under the ceiling, you got big temperature gradients in the room and were not providing the best conditions for comfort. Similarly, if the floor was extremely cold you could experience discomfort from that fact. Various heating systems had an influence on these conditions. You might have a system whereby heat was thrown down from the ceiling. Or, if you wanted a really nice warm floor, you could instal a system of small bore pipes under the floor and run them at a certain temperature; but that temperature must not be too high, because walking about on a floor heated above 75 degrees F. became uncomfortable. Movement of air should be accepted to a certain extent. It stimulated and refreshed. The rate at which air could move before being felt as a draught was about thirty feet a minute. As temperature was raised the rate of air movement might be increased and it could be decreased if temperature was lowered. So far as radiation was concerned the Medical Research Council under Dr. Bedford had been co-operating with the Building Research Station, and one study had been concerned with the relative temperatures of air and wall surfaces in a room.

Securing Optimum Conditions

Members of the Station had sat in experimental rooms for a couple of hours, and afterwards recounted their experiences of the different conditions to which they had been subjected. Eighty per cent. of them came to the conclusion that the optimum conditions were obtained when the temperature of the wall surfaces was a little higher than the air temperature. Under those conditions you would not be losing heat at a great rate to external cold surfaces. A second item of study had been as to foot comfort with different types of floor surfaces. Different materials had different rates at which they conducted heat. Metal conducted it rapidly, glass wool or similar material conducted it slowly. A second point about floor materials was their thermal capacity. With a given amount of any material you needed a certain amount of heat to raise its temperature by one degree Fahrenheit. For example, the temperature of wood was more easily raised than that of concrete. Thus if a floor surface had a high conductivity it would take heat away, and if it had a high capacity for holding heat it would take heat away ; and a material with both these qualities was less comfortable than one of low thermal capacity and low thermal conductivity. We all knew that a concrete floor was less comfortable for standing on than a timber floor. A third investigation which the Medical Research Council had made was in relation to a system of panel heating. In a multi-storeyed building you often had panel heating installed in the ceilings of rooms. Small-bore pipes were embedded in the construction of the ceiling. Nothing was visible, but heat from the panel was radiated to the room below. A cool head and warm feet were desirable, and to provide comfort it was necessary to consider what was the maximum temperature to which you raised the room and also what was the height of the ceiling. There was the question of thermal insulation. Much could be done in the construction of the house to keep down the rate of heat loss.

Illustrating his points by drawing on the blackboard, Mr. Nash said that pre-war a suspended timber floor was often used to reduce heat loss. In these days we put in a solid concrete floor and the actual rate of heat loss was appreciably less, one reason being that with the suspended timber floor cold air was introduced beneath it from outside to prevent dry rot. With the suspended timber floor the rate of heat loss was about 0.4 B.Th.U's per hour, with a solid concrete floor it was about 0.2 B.Th.U's per hour and with the concrete floor and a finish on top it was even less. In the construction of walls we appreciated the value of a layer of still air in preventing the loss of heat, and the solid 9-in. brick wall had generally been replaced by a wall consisting of two leaves each of 4½ inches thick and with a two-inch space between. By this means the heat loss could be reduced from 0.47 to 0.30, and a further improvement could be made by substituting lightweight concrete for the inner-leaf of the wall. Thus the heat loss might be reduced to 0.23. As to roofs, if you took a typical house where the roof space was not used for habitable purposes, in that case the best method of insulation was by putting a layer of suitable material at ceiling level. If you put the insulation immediately under the roof you had a larger space to heat and a larger area to cover with your insulating material. But there were one or two points to consider. Often there was a tank in the roof space, and in such a case the insulating material should be omitted underneath the tank and carried over it, and pipes should be well lagged. Ceiling insulation could be done with such materials as glass wool or slag wool. There was a second type of material which insulated by reflecting the heat. Such was aluminium foil: the brightness of the surface of this material prevented heat from passing through. With a boiler on the ground floor and a tank in the roof space you had to take care of the path through which water travelled between boiler and tank. It might be that you wanted the pipes to warm the house, but if you wanted the best results from the point of view of hot water, the pipes should be as short as possible and well insulated.

Lantern slides illustrated various forms of heating appliances, also various forms of wall construction, and a group of houses built for experiment in fuel consumption during the thirty-three colder weeks of the year.

In the case of new building, said Mr. Nash, it was possible to line rooms with a material of low thermal capacity, i.e., one which took a comparatively small amount of heat to raise the temperature. You could gain comfort condition in such a room more easily than in one with a very heavy capacity lining. If you had an extremely heavy stone-built house it took a long time to become comfortably warm: with fibre board or wood panelling you more readily raised the temperature to comfortable conditions. As to heating systems, Mr. Nash said he took heating to include space heating, supply of hot water and cooking. There were separate appliances for each purpose and appliances for doing two or all three. The available fuels were coal, gas and coke produced from coal and electricity. Oil was also used to a certain extent, but not much. We should use our coal as efficiently as possible: the amount of heat we could obtain from it depended on the method in which we used it. Starting with raw coal and a potential one hundred per cent. fuel value, if that coal was converted into gas and coke we got 73 per cent. conversion efficiency, i.e., 73 per cent. of the total heat value of the coal was passed on to the gas and coke. With electricity the conversion efficiency might be taken as 21 per cent., but modern power stations were now getting as much as 30 per cent., and it was claimed for

electricity that a certain amount of fuel was used which would be unsuitable for house fires. As to the efficiency of the appliances in which we burned the fuel, Mr. Nash said that with coal most people relied on the open fire, and 20 or 21 per cent. was often quoted as its efficiency conversion. This might be the radiant but this was not the full picture of the efficiency of the open fire place; and taking into account heat from the flue, hot water, etc., you might get 50 or 60 per cent. efficiency. With gas you had first of all 73 per cent. conversion efficiency and the appliance gave from 50 to 60 per cent. of this, so that the final figure was around 40 per cent. of the total coal. With electricity the efficiency of the appliance was 100 per cent. Therefore the 21 per cent. conversion efficiency was the final figure.

Mr. Nash showed a slide portraying a row of houses that had been built for experimental purposes. He said that just after the war a committee had been appointed to investigate the heating and ventilation of houses. That committee published a report, and one point raised therein was that there were not sufficient data to make comparison of different systems of heating and ventilating houses. Accordingly the Building Research Station had built a number of houses to measure the efficiency of the various systems of heating. Three groups of systems were installed. In one group the heating was partial, at the other extreme were the systems which heated the whole house, and between were various intermediate systems. In the simplest case of all —one called number 34—there was a fire in the living-room but no heating elsewhere except for cooking. From this point the systems were graded upward to complete central heating keeping the whole house constantly warm. The intermediary stage used boilers at the backs of fires and gas and electric stoves. The first stage was the least expensive to instal and central heating the most expensive. As to efficiency, number 34 gave a mean house temperature ranging round 53 degrees F., whereas with central heating a temperature of 60 degrees F. was maintained. The other houses with their different systems varied between these two extremes. As to running costs, taking capital expenditure and spreading it over 60 years, as was the practice with local government finance, when this was added to actual expenditure on fuel, the simplest type was still the cheapest, but the centrally heated houses were less expensive than those with an intermediary system. The time taken to attend to the heating appliances was a factor to take into consideration. Central heating required from 65 to 70 minutes per week. The simplest type of living-room fire, number 34, occupied 85 minutes, and the others up to 200 minutes per week. Comparing the cost per unit of heat delivered by each system, where there was central heating of the whole house the cost was about sixpence per therm. In number 34 it was about eightpence per therm. In some other cases the cost was up to one shilling per therm. District heating was in its infancy in this country but the Ministry had authorised twelve schemes. In these the cost per unit of heat delivered was eightpence or ninepence per therm. A thing to note in connection with district heating was that in the case of Salisbury the consumption of hot water had very greatly increased. When hot water was provided by each house separately, if the requirement was for not more than 200 gallons per week, gas or electricity would provide this more cheaply than coke or coal, but when you got to 250 or 300 gallons a week solid fuel was cheaper, and you also got some space heating from the same appliance.

Coming to ventilation, Mr. Nash said that for houses we relied mainly on air bricks, but when wind was playing on one side of the house you got wind pressure on that side and suction on the other. Thus the air brick, intended to let air out, might act to let cold air in. The warm air inside the building might be used for ventilation. Instead of air bricks there might be ceiling bricks in the bedrooms upstairs, and these might provide ventilation without the disadvantage of air bricks exposed to wind pressure. The Building Research Station had carried out research on air change in houses and recommended six hundred cubic feet per hour per person. That would be one air change and a half each hour. It was found that in a house with all the windows closed there was air change rate of two to two and a half per hour. It had cost something to warm the air that left the house, and it was estimated that if you got between two and three changes of air per hour with the therm at eightpence, ventilation cost about five shillings per week.

HELICOPTER SERVICES

Cost of Roof-top Landing Sites

RECOMMENDATIONS upon the minimum sizes of helicopter landing grounds, and estimates of the cost of roof-top sites, are contained in the first report of the Interdepartmental Helicopter Committee, published on March 9 (Stationery Office, 1s. 3d.). The committee were of the opinion that helicopters should operate from town centre to town centre, as otherwise the chief advantages of a "coming medium of commercial transport suitable for distances up to 300 miles" would be lost.

For twin- and multi-engined helicopters the committee's recommendations are that the minimum landing area should be (a) an area of 300 by 300 ft.; or (b) an area of "L" or "T" shape, giving two alighting areas each 300 by 150 ft. intersecting at right angles; and (c) an obstruction clearance at an angle of 26 degrees from the edge of the landing area.

In calculating the costs of a roof-top landing site, the report works on the basis of a five-storey building, giving a roof area of 300 by 150 ft. in each of the directions. The capital cost of the building would be £1,200,000. "From this capital sum must be abstracted those elements which are solely chargeable to the helicopter; namely, the cost of strengthening the roof and the cost of the accommodation required in the building for the conduct of helicopter services. It is calculated that these would amount to £79,000. To this sum, as in the case of the ground site, must be added the capital costs of essential facilities, which amount to £4,000."

Historic Buildings

The hospital of St. John the Baptist and St. John the Evangelist, founded in 1437, and Sherborne School are among buildings in Sherborne listed by the Minister of Local Government Planning as of special architectural or historic interest. In Buxton the building housing the thermal baths, designed by Joseph Paxton, the creator of the Crystal Palace, has been similarly classified.

L.C.C. LOYALTY CHECK

Formation of Special Panel

MEETING on March 20, London County Council approved the General Purposes Committee's proposals for a security check on staff having access to secret documents relating to civil defence. The decision means that the council will use the same test of loyalty as that adopted by the Government in regard to civil servants employed on work vital to the security of the State, namely, whether the individual concerned is "believed to be either a member of the Communist Party, or a Fascist organisation, or associated with either in such a way as to raise legitimate doubts about his reliability."

It has been estimated that about 70 posts will be involved in the check. The joint committee of members and staff has considered the proposed procedure, but the L.C.C. Staff Association, which has some 7,000 members, remains opposed in principle to the plan. After taking full account of the Staff Association's views, which contained an assurance of the fundamental loyalty of the staff, the council considered that the procedure was "justified and necessary."

A schedule of positions the holders of which have, or will have, access to secret information of use to an enemy will be drawn up, and the name of each member of the staff occupying such positions will be considered with a view to determining whether he is associated with Communist or Fascist organisations. A special panel consisting of the chairman of the General Purposes (Staff and General) Sub-Committee, the Leader of the Council and the Leader of the Opposition, will conduct the loyalty investigations, and the suspect will be given as full particulars as practicable of the allegations against him. Facilities will be allowed the officer or employee to appeal against the findings of the panel, and leave with full pay will be allowed pending such an appeal.

The panel will have powers to remove the employee from scheduled employment, when he will be given, as far as possible, non-scheduled employment in equivalent rank; if this is not possible employment will be found in a "reasonably comparable capacity." In exceptional circumstances the person concerned may be retired from the service.

Further steps will be taken to ensure that documents marked "secret" are seen only by those members of the council who require access to them in the discharge of their duties, and by a limited number of officers who are similarly concerned.

At the council meeting, Sir Percy Harris, Liberal, urged that when it came to a question of appeal a man should be entitled, as in a court of law, to proper legal representation. Mr. Henry Brooke, the Conservative leader, said the object was to safeguard the lives of the people of London and at the same time to safeguard the freedom of the individual.

Roman Chester

Excavations at Chester aimed at establishing the relationship between the Roman rampart and stone wall to the west side of the internal angle tower at the south-east corner of the Roman legionary fortress, have revealed massive foundations of a tower to the mediæval new gate.

IN PARLIAMENT

Low-Cost Houses

ON March 20, MR. MARPLES asked the Minister of Local Government and Planning when he proposed to publish plans for a three-bedroomed house costing less than £1,000.

MR. DALTON said that his advisers and he had been studying various plans which had recently been prepared, and he hoped soon to issue a circular to local authorities on the designs of council houses, seeking to combine economy with the maintenance of essential standards.

Model Building Bye-laws

On March 20 MR. WALKER-SMITH asked the Minister of Local Government and Planning when publication might be expected of revised model building bye-laws.

MR. DALTON said he was setting up a committee to advise him on this subject, and had invited local authority associations and professional bodies to submit names.

Building Ratio

On March 20, MR. ALPORT asked the Minister of Local Government and Planning how many applications had been received from local authorities to alter the existing ratio between houses built by the council and those built under private licence; and on how many occasions he had given his approval for this to be done.

MR. DALTON said the figure was 75, of which five had been approved.

MR. ALPORT asked the Minister on what principle he approved or refused applications of this sort and whether he was aware that his regional officers discouraged local authorities from submitting applications of this kind.

MR. DALTON said that he was not sure about the last part of the question, but several times since he had been in office he had said that he was quite willing, on cases shown, to increase the ratio. There was no abstract principle in the matter. It was a question of what representations local authorities made.

Historic Buildings

On March 13, MR. GOOCH asked the Minister of Local Government and Planning if, for the reassurance of property owners, he would reconsider the list of properties in Wymondham, Norfolk, recently scheduled by him as buildings of architectural or historic interest; and if he would give an assurance that in future owners of property would be consulted before scheduling takes place.

MR. DALTON said that the scheduling of buildings did no harm to owners, and it would not be appropriate to consult them in this matter.

Development Charges

MISS WARD asked the Minister of Local Government and Planning, on March 13, whether he was aware that development charges were arrived at by a process of bargaining; that many people were unaware of the fact that the original assessment was open to reduction; that no uniform system appeared to be in operation; and if he would take steps to ensure that everyone was equally treated in this matter.

MR. DALTON said that when a District Valuer was asked to assess development charge, he told the applicant what assessment he proposed and invited him to call and discuss it.

Waiting Lists

On March 13, MR. LANGFORD-HOLT asked the Minister of Local Government and Planning what recent information he had as to the present state of the housing waiting lists of local authorities.

MR. DALTON replied that reliable information would not be available until it was possible to carry out a comprehensive survey on a uniform basis by all local authorities.

Building Licences

In reply to LT.-COL. LIPTON on March 13, MR. STOKES said that licences to a total value of £3,829,000 and £1,565,000 were issued in 1950 in London and the rest of England and Wales respectively for building offices to be let to the Government.

Carlton House-terrace

MR. HOLLIS asked the Minister of Agriculture, on March 15, if he would make a statement concerning the consultations which have led the Commissioners of Crown Lands to the conclusion that Carlton House-terrace was not suitable for embassies, clubs, flats or hotels.

MR. TOM WILLIAMS said that the future of these buildings had on many occasions been the subject of consideration and consultation between the departments concerned. The only formal consultation on user was with the Crown Lands Advisory Committee in 1933. That Committee recommended residential user, which included embassies and clubs of good standing. They stated that, while they would reject blocks of flats on redevelopment and would rigidly exclude hotels, they would not object to the conversion of any existing house into flats. The Commissioners considered several schemes for conversion into flats, but none of these schemes was approved and the Commissioners were professionally advised that the satisfactory conversion of these houses into flats must be considered impracticable. The Commissioners had not regarded the houses as unsuitable for embassies or clubs, and some of them were in fact let for those purposes before the war; but, for other houses, lessees for embassy or club use were not forthcoming, and the Commissioners reached the conclusion that there was no prospect of letting all the houses for those uses.

Protective Spraying

On March 12, MR. RICHARD ADAMS asked the Minister of Supply how far the use of zinc and other protective spraying was permitted in the production of such building materials as rainwater goods and metal windows; and whether any restrictions would be placed upon the use of metals in short supply for such purposes.

MR. GEORGE STRAUSS said that, so far as supplies were available, zinc and copper or their alloys might at present be used for protective surface finishing of metal windows and rainwater goods, other than cast iron.

Scottish Housing

On March 13, MR. RANKIN asked the Secretary of State for Scotland if he had now decided what contribution the Tarran house would make towards solving Scotland's housing problem; and if he would recommend it to local authorities.

MR. T. FRASER said that the Secretary of State had already approved a permanent concrete four-apartment bungalow sponsored by this firm and had brought it to the notice of the local authorities. The firm's proposals for producing a cheaper type of bungalow had been substantially modified and he expected very shortly to receive a report which would enable him to decide whether it could be approved for housing purposes.

Fees to Surveyors

On March 13, MR. MARPLES asked the Chancellor of the Exchequer what sum he had paid as fees to the surveyors representing applicants for compensation out of the global sum of £300,000,000 under Sections 58 and 60 of the Town and Country Planning Act; and what was the estimated cost of the Government's own surveyors who were administering the compensation payable.

MR. GAITSKELL said that contributions towards fees were paid after the amount of the claim had been finally determined. The amount paid to the end of February, 1951, was £550,014. As to the second part of the question, he regretted that it was impossible to give any reliable estimate.

Defence Needs

On March 20, MR. MARPLES asked the Minister of Works how much cement did he estimate would be needed for the defence programme for 1951, 1952 and 1953.

MR. STOKES said it was impossible to state with precision the requirements of the defence programme for cement for three years ahead in advance of the planning of the individual jobs. He had taken account, however, of defence needs in asking the cement manufacturers to be prepared to deliver 9.2 million tons of cement to the home market in the present year.

MR. MARPLES also asked how many bricks he estimated would be needed to meet the requirements of the defence programme for 1951, 1952 and 1953.

MR STOKES said it was impossible to state with precision the requirements of the defence programme for bricks for three years ahead, in advance of the planning of the individual jobs. He had taken account, however, of defence needs in calling for an increase in the production of bricks to a yearly rate of 7.4 thousand million as soon as possible.

On March 20, LT.-COL. LIPTON asked the Minister of Works whether the licences he granted in 1950, amounting to £4,394,000, for building offices to be let to the Government, had been reviewed in relation to the defence programme and civilian housing.

MR. STOKES said that he considered it would be unreasonable to cancel licences once they had been granted and the developer had made his arrangements, save in the most exceptional circumstances. He understood that all this work had, in fact, been started.

LT.-COL. LIPTON asked the Chancellor of the Exchequer, on March 20, to what extent, bearing in mind the needs of the defence programme and of housing, he proposed to reduce non-residential building within the capital investment programme.

MR. GAITSKELL said that the investment programme was being reviewed in the light of the requirements of the new defence programme.

Building Rules

On March 20, MR. KABERRY asked the Attorney-General whether his attention had

been called to the admitted contravention of building regulations, Defence Regulation 56a, by the Yorkshire Electricity Board to an amount of at least £42,000; and what action he intended to take.

SIR HARTLEY SHAWCROSS said that these allegations which concerned matters involving authorisation by the Minister of Fuel and Power and not licensing by the Minister of Works, were brought to his notice by the reports of the debate on the adjournment on March 6, and he immediately directed that inquiries should be conducted into the matter by the Director of Public Prosecutions with a view to the possibility of legal proceedings being taken. The inquiries which he had set afoot were now proceeding, and their result would be reported to him in due course.

In reply to a question on the contravention of building regulations put by Wing-Commander Bullus, MR. STOKES said that in the four years 1947-50 his Department and local authorities investigated 19,489 cases of alleged contravention of Defence Regulation 56a. Records did not show the type of concern involved in the alleged contraventions where no proceedings were instituted, and the information could not be obtained without an undue amount of research. Proceedings were instituted in 1,189 cases involving 1,523 private individuals, 507 private companies and two boards of nationalised industries.

B.E.A. Works

On March 19, MR. NABARRO asked the Minister of Fuel and Power whether he would state the global value of current building licences issued to the British Electricity Authority; the materials involved; and to what extent this programme would now be curtailed in view of the needs of defence, productive industry and housebuilding.

MR. NOEL-BAKER said that figures were not readily available of the value of authorised building work at present in progress, but during 1950 and 1951 he had authorised the 14 Divisions of the B.E.A. and the 14 Area Boards to proceed with 102 projects for new offices and administrative centres, and for structural alterations to existing offices and centres. The estimated cost of these projects amounted in all to £400,709. About 75 standards of softwood would be required, but as no licences were needed for steel, cement and bricks, the figures of the quantities of these materials which were required were not available. These works had no priority, and would not, therefore, interfere with urgent work for the defence programme. He could not say to what extent the defence programme might make it necessary to defer them.

London Statues

On March 20, BRIGADIER TERENCE CLARKE asked the Minister of Works if he would arrange to have the principal London statues cleaned up for the Festival of Britain. MR. STOKES said that most statues in the care of his Department were cleaned at intervals of about three months, the exceptions were Nelson and the Duke of York which, being at the top of high columns, were cleaned about once in 25 years. He did not consider that there was any need for special cleaning for the Festival.

The Churchill Arch

On March 20, SIR RICHARD ACLAND asked the Minister of Works whether he was aware that large numbers of visitors on Saturdays passed through the Churchill arch without noticing that it was the Churchill arch; and if he would arrange to display, on days when the Palace of Westminster was open to the public, a suitable notice saying, "Churchill Arch."

MR. STOKES said that there were many points and objects of interest to visitors passing through the Palace of Westminster, and he saw no reason to draw special attention to the arch in question in the manner suggested.

Government Liability

On March 20, MR. W. SHEPHERD asked the Minister of Works if he would state the total amount which the Government had committed itself to pay since the end of the war to owners of new buildings erected for occupation by Government departments; and whether this amount was included in the figures published in the Economic Survey.

MR. STOKES said that on the 48 buildings to which his department was already committed the liability to charge on public funds amounted to a total annual rental of just over £1 million and a capital expenditure of about £¾ million on occupational fittings. Other capital expenditure was the responsibility of the lessors and not a commitment on public funds, although an estimate of the amount was included in the figures for capital investment on Government building published in the Economic Surveys.

Nissen Huts

On March 20, MR. DEEDES asked the Minister of Local Government and Planning how many Nissen type huts in camps under his control were being used as dwelling-houses; and how many were being so used when he took over these camps. MR. DALTON said there were about 37,000 huts in the total, but he could not say how many of these were Nissens.

Rents of Local Authority Houses

On March 20, MR. ALPORT asked the Minister of Local Government and Planning whether, in view of the decision of local authorities to charge additional rent for council houses in which more than one family was accommodated or in which the tenant took any lodgers, he would consider taking the necessary steps to extend this principle to rent-restricted accommodation providing that adequate safeguards existed against overcrowding and against exploitation of the tenant by the landlord.

MR. DALTON said that this would require legislation for which time was not available.

Mining Areas

On March 20 MR. MARPLES asked the Minister of Local Government and Planning how he proposed to amend the allocation of houses to local authorities to provide for the 10,000 houses which were to be built in mining areas.

MR. DALTON said that no amendment in the allocations made to other local authorities for 1951 would be necessary.

Bomb Damaged Areas

On March 20 BRIGADIER TERENCE CLARKE asked the Minister of Local Government and Planning if he would grant additional building licences to bomb-damaged cities to speed up their building programmes and bring these cities in line with others that suffered no war damage.

MR. DALTON said that in blitzed cities, he must keep a balance between new housing and the rebuilding of banks, offices and shops in the central areas.

Paper Liner Supplies

Replying to a question by MR. GEORGE JEGER, on March 20, on the shortage of paper liner for plaster boards, MR. BOTTOMLEY said he was aware that the plasterboard industry, in common with other industries using paper and board, were having difficulty with supplies of liner, but not to the extent of causing a serious interruption in the housing programme. The liner manufacturers were handicapped at present by the shortage of waste paper, supplies of which should improve shortly as a result of the national salvage campaign. Meanwhile, they had been asked to maintain supplies of plasterboard liner at a level sufficient for the essential requirements of the housing programme.

Hotel Building Licences

MR. VOSPER asked the Minister of Works if he would state the number of licences granted during the last 12 months for the building of new hotels and the total value of these licences.

MR. STOKES said that three licences, to a total value of £124,000, had been granted for the purpose in this time.

The Festival Gardens

THE FOREIGN SECRETARY (Mr. Herbert Morrison), in reply to MRS. CASTLE, said that the Finance Committee of the Board of Festival Gardens had carried out a further review of the rate of expenditure, which had proved to have reached a more serious scale than the information supplied to him by the company on March 6. It was only too clear that their task could not be completed without further provision of development capital. The Government therefore proposed to introduce legislation in order to grant a further loan of £1 m. to the company.

Mr. Morrison added: I am particularly sorry that in my reply of March 6 I should unwittingly have given the House what now proves to have been an incorrect view of the prospects of total expenditure, which, on the revised figures now available, will be approximately £2½ m. On these figures the loss on operation for six months only may amount to as much as £1½ m., and this greatly adds to the financial argument in favour of continuing to operate the Gardens for a further period during which more revenue could be put against the initial cost of development.

"People at Work" Conference

Three identical conferences entitled "People at Work," organised jointly by the Industrial Welfare Society (Incorporated), the National Institute of Industrial Psychology, and the Royal Society for the Prevention of Accidents, are to take place during the Festival of Britain. The dates of the conferences are: June 30—July 4; July 5—9, and July 10—14. Each will be held at Keble College, Oxford. The programme has been planned to provide plenty of opportunity for the exchange of views and experiences by means of general or group discussion.

General Principles of Prestressed Concrete

A London Lecture

A SUMMARY of the basic principles of prestressed concrete was given by Mr. P. G. Bowie, A.C.G.I., A.M.I.C.E., M.I.Struct.E., in a lecture given in London. Following is the text of his remarks.

Prestressed concrete has been developed for two main reasons—to economise in the amount of steel required and to minimise any chance of corrosion by ensuring that no cracks occur in the concrete under working loads. Before attempting to outline the general principles on which the design of prestressed concrete is based, it may be as well to indicate briefly why it is not possible to achieve an equivalent saving in normal reinforced concrete by the use of the very strong types of steel now available.

The strength of any beam depends on the forces in the top and bottom flanges and the distance between them. It follows that the total compression in one flange is equal to the total tension in the other.

Because concrete has so little strength in tension, sufficient steel bar reinforcement is provided in a reinforced concrete beam to take the whole force in the tension flange. The concrete round these bars cannot stretch as much as the steel, so that miscroscopic cracks occur, the width or number of which depend on the stress in the bar.

At normal stresses of, say, 8 tons per square inch, experience has shown that these small cracks are not in any way harmful, but if one were to employ the steel wire now available, which is four or five times as strong as mild steel at a stress four or five times as great, the cracks would be so big that the concrete would no longer give adequate protection to the reinforcement.

In addition, the greater extension of the wire would have the effect of raising the neutral axis so much that the amount of concrete available to provide a compression flange would be greatly reduced.

The Main Difference

The invention of prestressed concrete by M. Freyssinet does not involve the use of new materials or of new principles in mechanics. The main difference between prestressed concrete and normal reinforced concrete is that instead of waiting for the loads to induce forces in the flanges, these forces are introduced *before* any load comes on the beam. Moreover, these induced forces are, in general, such that the stresses engendered in the concrete are of an opposite kind to those which will occur when the structure is loaded. For example, in a beam under load, tension stresses normally occur in the bottom flange; by prestressing, forces would be applied sufficient to cause an initial compression stress in that flange. In a tank, where the walls would normally be in tension due to the water pressure, an initial compression would be given by binding the concrete tightly so that no tension will occur when the tank is filled.

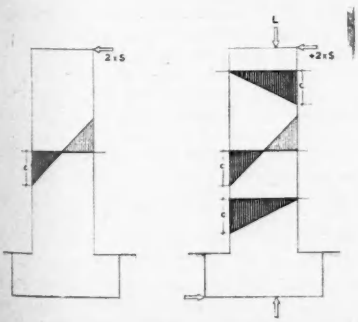


Fig. 1.—Stress in sideway loaded pier with and without eccentric load

Because concrete is so weak in tension, the ideal aimed at in prestressed concrete design is to ensure that under working conditions the concrete is always in compression to some extent. If this is done, the cross section of the concrete can be decided by exactly the same means, employing the moment of inertia, etc., as is used in the design of such materials as steel, timber or masonry, because up to within about 50 per cent. of its ultimate strength, concrete in compression is, for all practical purposes, elastic, and the distribution of stress across a section, therefore, follows a straight line law.

It may help to make this clear if we consider as an example an ordinary concrete or masonry pier (Fig. 1), subject to a sideway load only and, neglecting the weight of the pier itself, the distribution of stress at the base would be as indicated in the left-hand diagram, but if by some means or other a direct load was applied at the top both direct and bending stresses would be caused which would result in the stress distribution shown in the right-hand diagram.

Whether the bending is caused by a sideways load or by a bending moment due to the load on a beam does not affect the principle (if one pier was inverted below the other, one would have the same conditions as apply to a vertical beam loaded at the centre), neither does it matter whether the super-load is applied by gravity or by means of a tie inside the concrete, as in Fig. 2. Moreover, the size of the bar is unimportant. What matters is the force or pull in it—in other words, the effect of the tie is independent of the actual stress per square inch on it and one can therefore make full use of the very great strength of the cold drawn wire now available.

An Example

As a very elementary example, assume that a rectangular prestressed concrete beam is required to resist a bending moment of 100,000 in. lb. and that the working stresses permissible are 1,500 lb. per sq. in. on the concrete and 150,000 lb. per sq. in. on the steel:—

$$1{,}500 \frac{bd^2}{6} = 100{,}000 \text{ or } bd^2 = 400$$

If b = 4 in., d = 10 in. the average stress is 750, therefore the total compression is

$$4 \times 10 \times 750 = 30{,}000 \text{ lb.}$$

and the area of wire required is

$$\frac{30{,}000}{150{,}000} = 0.2 \text{ sq. in.}$$

with its centre of gravity located at $\frac{2}{3}$ of the depth.

If, on the other hand, the unit was not a beam but a post or pole which might be subject to bending in either direction, the centre of gravity of the tie would have to coincide with the centre of the section as in Fig. 3.

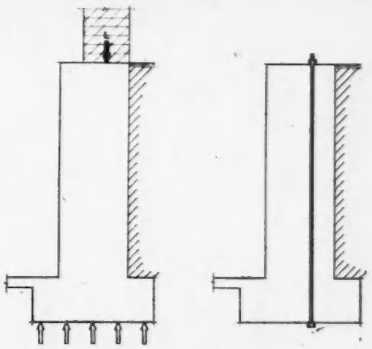


Fig. 2.—Alternative methods of eccentrically loading a pier

and therefore for the same amount of concrete and steel it would only be possible to provide for a bending moment each way of half the amount.

In effect, prestressing changes a simple beam into something more like a flat arch. The lines of principal stress in the beams (Fig. 4) are modified—tension in the flange has disappeared and the diagonal tension in the web is so much reduced that considerable saving is possible in the quantity of concrete required to resist shear.

The basic principle of prestressed concrete design is then to create compression stresses in the concrete of such a value that little or no tension stress will be developed when the unit is subjected to working loads, this initial compression usually being caused by the contraction of stretched steel wires anchored in or at the ends of the beam.

The wires are, in general, stretched by means of hydraulic jacks either by:—

Post-tensioning, in which the jacks thrust against the concrete after it has hardened, or

Pre-tensioning, in which the wires are stretched between fixed anchorages before the concrete is placed round them.

In the first case the anchorage which at "transfer" causes compression in the concrete is generally positive, taking the form of a collar or washer in which the wires are fixed by wedges.

In the second case the anchorage is by bond, and is increased towards the ends by the swelling of the wire into a slightly conical form.

Tension Stress in Wires

In order to appreciate the difference between these two methods it is necessary to go back a little way and consider how the actual tension stress in the wires is arrived at.

The wires are stretched initially to the extent of about 5 in. in 65 ft. corresponding to a stress of about 180,000 lb. per sq. in. On "transfer" the jacks are released and the concrete is compressed longitudinally and consequently yields to the extent of about 1 in. due to various causes—stress, shrinkage, etc. The reliable permanent compression in the concrete is that due to the stretch left in the wire of about 4 in. in 65 ft. corresponding to a stress of, say, 140,000 lb. per sq. in.

The efficiency of the method and the economy of the process therefore depends mainly on the amount by which the original stretch exceeds the total yield. For this reason, it is important that the stress in the wire shall be as high as can be safely attained, and that the quality of the concrete shall be such that not only will the strength

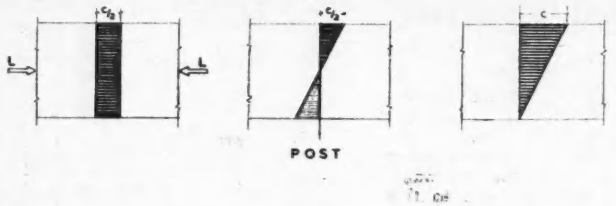


Fig. 3.—Stresses in prestressed posts and beams

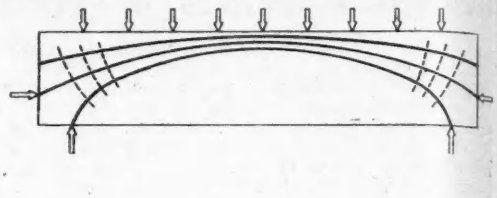


Fig. 4.—Effect of prestressing on principal stresses

be great, but the shrinkage and other causes of yielding shall be as small as possible.

The total yield is made up of several items and is not necessarily of the same value for post-tensioning as for the pre-tensioning method. For purposes of illustration the items may be summarised as in Fig. 5 with some indication of how the values are affected by the method of manufacture. In practice most designers make an ample provision for the total yield of between 0.15 per cent. and 0.20 per cent., corresponding to a loss of initial stress in time of from 40,000 to 55,000 lb. per sq. in.

Of these items, slip at the anchorage can amount to about $\frac{1}{16}$ in. when the wedges take up the pull; consequently the greater the length of wire between the anchorages, the less is the slip.

Creep of steel may occur, but it can be minimised by an initial overstress of about 5 per cent., and in that case its value is considerably less than the figure given above.

The nature of the wire or rolled bars employed is determined by the process by which they are made and is defined by specification. The character of the concrete, on the other hand, is determined on the site and is subject to direct control. In order to minimise yield the following facts should be borne in mind.

Elastic yield is less as the strength of the concrete increases.

Plastic yield or creep depends on the stress and is approximately proportional to the amount of aggregate in the mix—that is, the creep of a 1:2:4 concrete is about twice that of a 1:1:2 concrete. Creep increases with time, but reaches a maximum in about 18 months.

Shrinkage is primarily due to loss of water through the drying out of the concrete, and appears to be directly related to the quantity of water per cubic yard, irrespective of mix. Consequently, it too may increase with time to a limited extent. In addition, there is some evidence that the shrinkage of concretes made with crushed stone aggregates is slightly less than of those in which a gravel aggregate is employed.

Reinforced Concrete Not Superseded

The invention of prestressed concrete does not mean that normal reinforced concrete is now entirely superseded — only that the uses of concrete have been extended.

The tonnage of steel required is only about one-fifth of that needed in an equivalent reinforced concrete beam.

The quantity of concrete involved is less, with a consequent saving in dead weight, for several reasons: higher shear stresses are permissible because of the reduction in diagonal tension by the prestress. Owing to the long length of wire available it is usually unnecessary to increase the width of a beam in order to provide for laps.

In precast work the tension on the wires draws them so taut that they are held rigidly in position and most of the subsidiary binding normally used to ensure adequate cover is unnecessary. The absence of a definite yield point for this type of wire and the consequent increased elasticity when overloaded greatly reduces the likelihood of damage in transit or during erection.

Above all, the process is such that both the concrete and the wire are tested during the manufacture of the unit and any fault in either material is certain to be obvious when the pressure on the jacks is released, thus endowing prestressed concrete with a quality which practically no other building material can claim.

It is, however, perhaps necessary to point out that to obtain these very real advantages both in saving of materials and improved performance involves close attention to all details in the design and construction of the work and that, as M. Freyssinet has pointed out, the use of brains in place of material must be paid for.

So far, mention has only been made of the behaviour of prestressed concrete under working loads. In general, this means that any tension in the concrete is not sufficient to cause cracks. If the load is increased beyond this point by perhaps 50 per cent. cracks do develop, but because the stress in the wires is still within the elastic range, these cracks close up entirely when the load is removed. Under ultimate conditions, that is when the load is increased to two or three times its working value, cracks are developed, the effective depth of the beam is increased and the nature of its failure is akin to that of a normal reinforced concrete beam.

NATURE OF YIELD	MAX. AMOUNT	POST-TENSION	PRE-TENSION
SLIP AT ANCHOR	·01	·01	00
CREEP OF STEEL	·01	·005	·005
ELASTIC - CONCRETE	·03	·01	·03
CREEP OF CONCRETE	·06	·05	·06
SHRINKAGE - CONCRETE	·02	·015	·02
TOTAL	·13 %	·09 %	·115 %

Fig. 5

It has only been possible in this summary of basic principles to consider prestressed concrete as a material. Prestressing as a technique has far wider possibilities. The engineer, for the first time, has the power of controlling not only the stress distribution in the individual members of a structure but of determining how the structure as a whole shall act, whether, for example, as a beam or an arch, or the extent to which either characteristic shall apply. Other applications, of which more will soon be heard, such as the economies possible by the use of prestressed wire and a greatly reduced thickness of concrete in water and other tank construction, make it clear that though at the moment prestressed concrete is only a very healthy infant we may look forward to its greatly improved development as time goes on.

PRIVATE HOUSE LICENSING

"Initiative Now with Local Authorities"

"BY HIS STATEMENT that if local authorities could give good reasons in support of their applications he would be prepared to increase the numbers of private enterprise houses above the 4:1 ratio, Mr. Dalton has shown that he realises that local authorities are the best judges of housing needs in their areas," MR. STEPHEN HUDSON, president of the National Federation of Building Trade Employers, told the Yorkshire Federation at their annual dinner at Bradford on March 21.

"The initiative in this matter now rests with local authorities," Mr. Hudson continued. "I hope that they will at once review the position in the light of applications from would-be owner-occupiers and of their housing subsidy commitments. They will, I am sure, appreciate the advantages of this opportunity, because municipal housing involves a subsidy of at least £16 10s. per house for 60 years from the Exchequer and a further £5 10s. from the rates, apart from subsequent maintenance costs. The greater the number of private houses built the greater will be the financial savings to public funds.

"Local authorities and the local associations of the National Federation have worked in close co-operation in the past and it would be in the public interest if they pooled their experience and knowledge in this matter."

LIGHTING OF BUILDINGS

Results of Recent Research

THE following is a summary of a paper on the lighting of buildings, presented by Messrs. W. A. Allen and R. G. Hopkinson, of the Building Research Station, at the joint meeting of the Architectural Science Board of the R.I.B.A. and the Illuminating Engineering Society, in London, on March 13.

Recent research on the lighting of buildings had been devoted to the lighting of the whole environment rather than that of the plane of the visual task alone. Progress had been made in the architectural field by trials of new designs to reduce harsh contrasts in the environment, without recourse to flat and uninspiring lighting. In the experimental field, studies had been made of the factors which influenced glare, and of the methods which resulted in greatest visual comfort and efficiency.

The paper showed how the various computational approaches to the problems of lighting had influenced such matters as window design and town planning in the case of natural lighting, and fittings design and the siting of fittings in the case of artificial lighting. The limitations of the computational approach were, however, not forgotten, and considerable thought was being given to such problems as glare and brightness distribution and ratios.

The architectural and the experimental approach to the lighting problem had led to identical conclusions about the technique of good lighting. The basic conclusions which had emerged were as follows:—

(a) By good lighting was meant the most effective compromise between lighting that yielded maximum visual performance, visual acuity, comfort, attention to the work or general overall brilliance; this compromise must depend upon the purpose of the lighting and the character of the building.

(b) Arriving at this most effective compromise we had to consider the following points: (i) For maximum acuity the work should be the brightest part of the field of view, and the surroundings should be only a little less bright; acuity was greater the brighter the task up to maximum daylight levels experienced outdoors; (ii) On the other hand, for maximum comfort the work should be the brightest part of the field of view and the immediate surroundings should grade off into the general surroundings of lower brightness. There was a limit to the maximum task brightness for visual comfort. It might be of the order of 1 - 500 ft. lamberts; (iii) For maximum concentration the centre of interest should be bright, colourful and contrasting, and the surroundings should be dark; (iv) For maximum overall brilliance there should be brilliant sources of light suitably placed in the field of view. These sources should be of low intensity (but high brightness) to avoid glare discomfort. Otherwise they should be graded into the background.

(c) In general, whereas in work-places brilliance was not an essential feature of lighting, on the other hand, drabness should be avoided. It was often a great advantage to have sparkle on the centre of interest; for example, on machines this need for sparkle did not depend on the result of formal experimentation, but there was a great deal of circumstantial evidence for it and there was a persistent tradition throughout history. Totally indirect lighting of flat surfaces tended to be drab and soporific. Interest was aroused by variety in the brightness pattern. For this reason there was an advantage in a view of the lighting fittings, and again for these to be of non-uniform brightness. Glare discomfort from the units would be avoided by the use of contrast grading in the design.

LAW REPORT

Civil Engineers' Reputation Defended

KING'S BENCH DIVISION

BEFORE MR. JUSTICE VAISEY

The London Ferro-Concrete Co., Ltd. v. Alexander Justicz

"I THINK the defendant was a busybody with an eye to his own advantage," said Mr. Justice Vaisey in the King's Bench Division, on March 15, giving judgment against Mr. Alexander Justicz, an expert in reinforced concrete, of Woodbourne-road, Edgbaston, Birmingham, who defended an action by the London Ferro-Concrete Co., Ltd., civil engineers and contractors, of Vauxhall Bridge-road, Westminster, alleging that their reputation had been injured by a letter written by Mr. Justicz.

It was stated that plaintiffs and Mr. Justicz's firm tendered for constructional work at Neston, Cheshire, and plaintiffs' tender was accepted. Mr. Justicz then wrote to the company who had asked for tenders and suggested, it was alleged, that plaintiffs' methods of construction were unsafe and dangerous.

Mr. Glyn Jones, K.C., for plaintiffs, contended that the motive of the letter was manifest spite designed to injure a successful competitor. The action was brought, he said, not for money but to protect the plaintiff company's reputation. They also asked for an injunction to restrain Mr. Justicz from repeating the statements of which complaint was made.

Mr. Justicz pleaded that the letter did not bear the meaning alleged.

Giving a reserved judgment, Mr. Justice Vaisey said that he considered the words complained of were written with the deliberate intention of depriving the plaintiffs of the benefit of the acceptance of the tender and to injure them in their business and reputation. He was satisfied that it was also Mr. Justicz's intention to procure the contract for himself. The statements he made were untrue and malicious. He was a busybody with an eye to his own advantage.

His lordship made a declaration that the letter contained untrue statements made without justification and gave the plaintiffs liberty to apply for an injunction to restrain any repetition of the statements. He also awarded them £105, and costs.

THEFT OF LEAD

Plea for Heavier Penalties on Offenders

MR. ALFRED C. BOSSOM, F.R.I.B.A., M.P., has taken up with the Home Secretary, Mr. J. Chuter Ede, M.P., the question of penalties inflicted by petty sessional and stipendiary courts for cases involving the theft of lead from buildings.

Mr. Ede has now written to Mr. Bossom: "The maximum penalty for this kind of offence is five years' imprisonment, and that seems adequate. Subject to this maximum, the penalty in each case is for the court to decide, and it would not be within my province to seek to influence the courts in the exercise of their discretion."

TRAINING FOR BUILDING

A.B.T. President's Views

MR. R. J. SOPER, M.Sc.(Eng.), A.M.I.C.E., A.M.T.P.I., gave his presidential address to the Association of Building Technicians on March 17. The building industry, he said, was called upon to bear what must still be considered the most pressing problem of to-day—the housing of our people. The wastage of the war years, the lack of building for six long years, with thousands of the buildings of the last century becoming more obsolete and ill-suited for their purpose and slum areas still uncleared, presented a formidable task, with the pressure of an expanded population still to be satisfied.

"This is the problem which the building industry has to face to-day in a situation of rising costs and the requirements of defence. Though the building industry is flexible it cannot be expanded, or its activities redirected, at short notice. Who would expect production from a new industrial project such as the steel factory in South Wales in terms of less than many months or even years?

"Building prices are rising and we must anticipate increases of up to 20 per cent. by the end of this year. The cost of timber in the average house has risen by £50 in the last few months alone. Material shortages also must be feared."

There must be serious doubts whether we could achieve the housing programme of 200,000 houses in 1951 except at the expense of the equally vital hospitals, schools, health centres and those other buildings which were so essential to the community, continued the speaker. What was the solution? Was it to be by a wholesale cut in standards? We were building not for a year, but for a generation, and any reduction in standards would be felt not only by ourselves but by those who followed us.

"The only reply is an increase in production, which the Trade Union Movement must tackle," declared the speaker. "It is not to be found only in departmental reports or committees but in the fraternal efforts of all of us in the Trade Union Movement." The extension of university degrees in building courses were essential to the more efficient production within the industry. The establishment in a university of a Chair of Building must be realised.

Employers and the Supplementary Reserve

The War Office is anxious to obtain the sympathy of employers in allowing employees to join the Army Supplementary Reserve. The object of the S.R., it is explained, is to provide the technical and administrative units needed to form the essential backing to the fighting formations of the Regular and Territorial Armies immediately in the event of mobilisation. Because members of the S.R. will normally be technicians whose military employment would be almost identical with their civilian occupations, there is no liability for evening drills or week-end training. The normal training is an annual 15-day camp, and in certain cases military training in peace time is not needed at all. The principles and procedure for reserved occupations are identical with those devised for the T.A., which have recently been accepted on behalf of both sides of industry by the Minister of Labour's National Joint Advisory Council. Volunteers for the S.R. can enlist only provided they have been cleared in this respect by the Ministry of Labour.

MODERN PLUMBING METHODS

British and American Practice Compared

THE National Consultative Council has approved the report on "Modern Methods of Plumbing and Draining" prepared by the committee set up by the Ministry of Works to study this subject with special reference to the Anglo-American Productivity Team report on American methods of plumbing and drainage. It is the committee's considered view that while technical knowledge in Great Britain is in no way behind that of the United States, up-to-date knowledge is not sufficiently widespread and there is a considerable field in this country for the extension of modern plumbing practice and for important changes in design, inspection and approval.

A feature of American practice which the committee feels is of outstanding importance is the completion of fully detailed schemes of plumbing and drainage as part of the main design of any building before tenders are invited. In this country it is too often the practice for plumbing details and even sometimes complete designs to be left undetermined before the contractor submits his tender, with the result that the contract may be awarded to the firm which prepared the cheapest design rather than to the most efficient contractor. It is in design that the greatest contributions can be made to efficient and economical layout, and architects may well find that the employment of qualified designers with specialised knowledge at an early stage will often enable provision to be made to include the latest developments in layout and technique. It is obvious that competing tenders should all be related to the same design.

In designing layouts for water supply and drainage for buildings the first considerations are, of course, efficient performance and the safeguarding of public health. Subject to these, however, the main objectives are economy in layout and installation, adequate protection against frost and economy in maintenance costs.

The relative simplicity of American layouts for water supply is partly due to the general absence of cold water storage cisterns. The practice of connecting all cold water outlets direct to the mains is economical in installation costs inside buildings and provides clean water at all draw-off points. The system relies, however, on ample water-resources and maintenance of working pressure through public mains of adequate size. It requires pipes and fittings able to withstand mains pressure and in certain circumstances special arrangements to offset the risk of contamination of the mains water from back syphonage. In this country there are areas in which water supply conditions are difficult and existing pumping plant and distribution mains are limiting factors. Storage cisterns serve to even out individual supplies over periods of high and low demand. They provide constant pressure head for efficient operation of ball valves and mixing valves, and a reserve in the event of damage or alterations to mains. It is, in any case, considered important to provide cold water storage cisterns to feed hot water systems, for by permitting the use of an expansion pipe this is safer than the American practice.

There are many districts in the United Kingdom where cold water storage cisterns are installed to feed hot water tanks only, all other cold water outlets being connected to the mains direct. The committee considers that this system can offer some advantages in both simplicity and cost of installation. It recommends, therefore, that the possibility of using it should be carefully examined for all new towns and wherever new water schemes are being installed or old systems substantially extended. In assessing relative expenditure it is, of course, necessary to take into account the cost of suitable sizing of mains and of the provision of adequate working pressure.

Economical Layout

There are many features of efficient, economical design, which though known and practised in this country, should be much more widely adopted. The general principles are close grouping of appliances, both in plan and in the vertical plane, to give short pipe runs, the use of simple joints, adequate space for all pipe work and components and easy access for maintenance.

The planning of details requires careful attention. For example, the bath need not always be placed with the tap end to an outside wall, tending to make access difficult for the plumber and to create a frost hazard. Linen cupboards must provide adequate space for the plumbing components they are to contain and proper access for making connections. Pipes and fittings should be kept well away from ventilators and draughts of cold air. Wherever a storage cistern is installed in a roof space it should be placed well clear of the eaves, fully protected against frost. It should in any event be properly covered against contamination of its contents.

The layout of efficient and economic plumbing is only one of the matters that must be taken into account in designing a building, but it is of such importance to the health and convenience of the occupants that it should be in the hands of a qualified expert from the earliest stage of the work.

Design considerations are equally important in the layout of drainage schemes both above and below ground. American practice features the use of the one-pipe system of soil and waste disposal and though this system has been adopted for many large buildings in this country it merits greater attention than it has so far received. In particular, further efforts should be made to adapt it economically to small houses.

The economy and efficiency of one-pipe plumbing can only be obtained if a building is properly designed to incorporate the system and careful consideration must be given to this in the early stages of design. In America special fittings are commonly available which facilitate design and construction of the one-pipe system. In this country the demand for such fittings has so far been small and they have been made only to special order so that their cost is high. An assured demand would produce greater output and lower cost based on the use of standard patterns which would be taken into consideration in the design of any building where the system is to be used. As a practical measure to encourage the wider use of the system the committee recommends the early preparation by the B.S.I. of standard specifications for a wider range of suitable multi-branch fittings.

Drainage Below Ground

There are means of effecting economies in underground drainage layout which are practised in this country, but there is scope for their much wider adoption. The main principles are to use pipes of the most suitable dimensions, i.e., no larger and no smaller than is necessary; to reduce the number of manholes to a minimum; to eliminate intercepting traps from connections to new sewerage systems and to ensure that the amount of concrete under and around pipes is not excessive. Efficient planning of a drainage layout on these lines is largely dependent on the architectural planning of the building itself and on the local systems of sewerage to which the scheme is to be connected. These considerations will affect the length of the drains and the number of manholes required, and it is therefore important to study the drainage layouts in relation to the buildings at the earliest stage of design. The services of specialised designers may often be employed with advantage.

There is nothing in the model bye-laws either for building or for water supply to prevent the adoption of all the latest developments. There undoubtedly exist, however, significant variations in the practical administration of local bye-laws, and while their interpretation is of course a legal matter the committee recommends that local authorities and water undertakings should regularly review their requirements so as to ensure that the application of sound modern developments is not being unnecessarily prevented.

Equally, there is nothing in the Public Health Act, 1936, which prevents the adoption of up-to-date developments. There are, however, wide differences in the requirements of local authorities under their Public Health Act powers and a lack of appreciation of the measures that can be taken.

As one example, the drainage cost for three identical groups of 18 small houses each conforming to the requirements of a separate local authority in London, varies from £29 to £72 a house. The houses are situated on a side street with main sewers in a road at right angles. In the simplest of the three schemes the whole group can be drained through one pipe of 4 in. diameter for the first eight houses and 6 in. for the remainder. "Y" junctions are permitted on branch drains and only one connection is required to the main foul water sewer. For surface water, manholes are only required at the ends of each run of drains and two connections to the main drain are sufficient.

In the most expensive scheme a separate connection to the main sewers is required for every two pairs of houses, and branch drains must run into manholes. This means five sewer connections, many more manholes and a main sewer in the side street. In the intermediate scheme 10 houses are permitted to one sewer connection, one pair served by 4 in. pipe and the rest by 6 in. pipe.

The committee recognises the importance of local conditions and of local experience in meeting them, but it is convinced that there is scope for important economies in the more general adoption of up-to-date principles. It recommends that local authorities should take this into consideration in framing their requirements.

Advantages of Prefabrication

A matter which deserves further development is the prefabrication of parts of plumbing systems in workshops set up on the site itself and the provision of specialised hand- or power-operated equipment for this work. It is recognised that well-equipped workshops cannot always be operated economically on small sites, but the advantages of site-prefabrication are so marked that it should be adopted wherever there are sufficient repetition jobs and the provision of a properly equipped site workshop is practicable.

The committee draws particular attention to the high standard of inspection which is a feature of American practice. Proposals for all plumbing and drainage schemes are examined by officials with specialised knowledge and experience, and all work is inspected by such officials during the course of installation. In this country installations are inspected and passed on completion by the building inspector or, in some areas, by the sanitary inspector. The committee is advised that the building inspectors' examination of the Institution of Municipal Engineers, the sanitary inspectors' examination of the Royal Sanitary Institute and the Sanitary Inspectors' Examination Joint Board, and the examination of the R.S.I. in general hygiene and sanitation do not include plumbing and drainage work to an extent sufficient to ensure that successful candidates possess specialist qualifications covering the whole range of work in this field. It therefore recommends that these two bodies should be invited to consider the desirability of making appropriate provision in the syllabus and/or the conditions of their examinations or by establishing a new examination in consultation with the plumbing trade to secure this end.

In the course of its review, the committee has found that experts in this country are very well informed about practice in America. The distribution of up-to-date knowledge, however, is quite inadequate. Many of the difficulties described could be overcome or considerably eased if everyone responsible for plumbing and drainage installations and for approval of plans could be more fully informed of the merits of modern developments and of the conditions in which they can be economically applied to present-day building. The information available in Post-War Building Studies No. 4, "Plumbing," and No. 26, "Domestic Drainage," and in certain British Standard Codes of Practice, has done much to clarify points of efficient practice. These documents, however, have had to cover a wide field and could not, therefore, provide the detailed advice and the illustrations of modern developments that are clearly needed.

The committee therefore welcomes the decision of the Building Research Station to undertake the preparation of a new document on the lines required. This will deal with modern developments in plumbing and drainage and will treat this special field in considerable detail.

Conclusions

The conclusions reached by the committee are summarised as follows:—

(a) Detailed schemes for plumbing and drainage should be prepared as part of the main design of any building before tenders are invited, and the work should always be entrusted to qualified designers with specialised knowledge.

(b) Local authorities and water undertakings should regularly review their requirements with a view to ensuring that in no case is a sound modern development in plumbing and drainage being unnecessarily prevented from being brought into use.

(c) Examination and approval of plumbing and drainage schemes and inspection of the work should be undertaken only by officers with specialised knowledge and provision should be made for inspection while installation is actually in progress. The Royal Sanitary Institute and the Institution of Municipal Engineers should consider making appropriate provision in the syllabus and/or the conditions of their existing examinations, or establishing a new examination in consultation with the plumbing trade to ensure that successful candidates possess specialist qualifications covering the whole range of work in this field.

(d) For water supply, advantages are offered by the system in which cold water storage cisterns are provided only to supply hot water tanks, and all other outlets are connected to the mains; the possibility of using this system should be carefully considered whenever new water schemes are being installed or old schemes substantially extended.

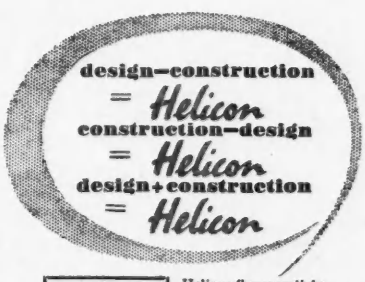
(e) In designing plumbing layouts for water supply in buildings, more attention should be paid to close grouping of appliances, simple joints, adequate space for pipework and components and easy access for maintenance.

(f) The one-pipe system of soil and waste disposal should be more widely adopted and its application to small houses further studied and developed; it would be an advantage if the B.S.I. specified a wider range of British Standard Specifications for suitable multi-branch fittings.

(g) There is considerable scope for effecting economies in underground drainage by using only the most suitable pipe sizes, reducing the number of manholes to a minimum, eliminating intercepting traps from connection to new sewerage systems and avoiding excessive use of concrete under and around pipes.

(h) Prefabrication of parts of plumbing systems in well-equipped site workshops should be adopted whenever the scheme involves a sufficient number of repetition jobs.

(i) There is urgent need of publicity for up-to-date developments with detailed examples of their practical application; the knowledge is available, but its distribution is insufficiently wide. The decision of the Building Research Station to undertake the preparation of a new document dealing with modern developments in plumbing and drainage in considerable detail is therefore welcomed.



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BRITISH STANDARDS

Jubilee Exhibition at Science Museum

THIS YEAR the British Standards movement attains its golden jubilee, and as a part of the celebrations an exhibition, "British Standards—the Measure of Industrial Progress," supported by practically the whole range of British industry, will be held at the Science Museum, South Kensington, during the two weeks beginning June 18, 1951.

The benefits derived from standards, standardisation and simplification will be graphically presented, and each industry will show how standards have simplified production, reduced costs and maintained quality, and how in turn they have benefited the users of that industry's products.

The exhibition will also show how research at one end of the production chain and quality control at the other are linked with and helped by standardisation. Other special features will include apparatus used in testing for compliance with British Standards.

The exhibition will be opened at 11.30 a.m., June 18, by the President of the Board of Trade. Admission will be free.

Aluminium and Aluminium Alloy Sections

THE BRITISH STANDARDS INSTITUTION has issued a revision of B.S.1161:1951—aluminium and aluminium alloy sections. The standard, which was first published in 1944, has now been extended to cover additional sizes of aluminium alloy sections and to include sections made for incorporation in designs. Most manufacturers are in a position to supply almost the full range, though it may be some time before some of them can supply all sizes. Many suppliers are able to make larger sections than those given in the table, but it is not yet practicable to standardise these. The sections covered in the new edition are given below:—

Equal angle sections, ¾ in. x ¾ in. to 9 in. x 9 in.; unequal angle sections, 1½ in. x 1 in. to 12 in. x 6 in.; channel sections, 3 in. x 1½ in. to 12 in. x 4 in.; "I" sections, 3 in. x 1½ in. to 12 in. x 6 in.; "T" sections, 1 in. x 1 in. to 9 in. x 9 in.

Copies of this standard may be obtained from the British Standards Institution, Sales Department, 24, Victoria-street, S.W.1, price 5s. post free.

NEWS IN BRIEF

Import Licensing Changes

The Board of Trade announces from March 28 many additions to the list of goods freely importable from all (i.e., including hard currency) countries. These include asbestos, asphalt and bitumen (natural), iron and steel scrap, iron ore, pig iron, corhart blocks and bricks, red cedar shingles and incense cedar wood.

Fifty Years' Service

Mr. W. A. Ward, a director of Messrs. Walter Lawrence and Son, Ltd., on Easter Sunday completed 50 years' service with the firm having started at the age of 13 as office boy, in 1901, at Waltham Abbey. To mark the occasion the staff have presented him with an inscribed gold watch as a token of their regard.

Competition for New College Entrance

Students of Stoke-on-Trent are to design and build the entrance gateway to the new College of Further Education at the Cauldron Centre. The design of the entrance has been thrown open for competition by building students of the North Staffordshire Technical College and the Stoke City Schools of Art. The Assessors are: Mr. H. Dibden, M.A., B.Sc., Mr. J. R. Piggott, F.R.I.B.A., Alderman G. L. Greaves, A.R.I.B.A., Mr. R. J. Willis, M.A., F.R.I.B.A., Mr. W. Leake, Mr. R. H. Marlow, A.R.C.A., and Mr. J. A. Pickavance, F.R.I.B.A.

British Plastics Exhibition

The British plastics exhibition and convention are to be held at Olympia, London, from June 6 to 16. The exhibition, while primarily for the trade, will be open also to the public in the afternoons. It will be the first trade show representing the whole industry. The main object is to promote a better understanding of plastics, their present wide uses and future possibilities. At the convention, which will be run concurrently with the exhibition, papers will be read which deal with plastics in building and architecture. At the afternoon session on June 11 Mr. Gontran Goulden, A.R.I.B.A., will speak on "The Architect and Plastics" and Mr. H. H. Lusty, A.M.I.E.E., on "What the Plastics Industry Offers the Building Industry."

Festival of Britain Travelling Exhibition

The Festival of Britain travelling exhibition will visit Manchester (City Hall, Deansgate) from May 5 to 26; Leeds (Woodhouse Moor) from June 23 to July 4; Birmingham (Bingley Hall, King Alfred's-place) from August 4 to 25; and Nottingham (Broad Marsh) from September 15 to October 6. Covering an area of more than 35,000 sq. ft., it is the largest transportable exhibition ever produced, and contains some 5,000 exhibits. Some of its unusual features include a full-size theatre, an exhibition façade made of steel and plastic, and a complete railway carriage. At Manchester the exhibition will be shown in permanent buildings, but at Leeds and Nottingham it will be installed in a rigid framed structure which will be specially erected for the occasion and which will be clad with 100,000 sq. ft. of canvas. Sections will be devoted to domestic equipment and furnishing, including lighting fittings, wallpaper, and floor coverings suitable for bathrooms, kitchens, living-rooms and so on.

Birmingham Building Trades Dinner

The annual dinner-dance of the Birmingham Association of Building Trades Employers was held at the Botanical Gardens, Edgbaston, recently, when more than 200 members and their ladies were received by the president, Mr. W. G. Robinson, M.I.O.B., and Mrs. Robinson. The function was conducted with a minimum of formality, and was voted a most enjoyable "family party."

Norwich Firm's Centenary

J. Youngs and Son, Ltd., of City-road, Norwich, builders and contractors, celebrated their centenary on March 21 by holding a dinner for their 350 employees and their wives. The firm was founded 100 years ago by James Youngs when he secured contracts for houses in Heigham-, West Wymer- and Trory-streets, Norwich, and the present head of the firm is another Mr. James Youngs, who entered the business in 1903. The firm has had a number of ups and downs in the course of its history, and on two occasions has had its workshops and machinery destroyed by fire.

National Insurance and "Z" Men

Employer's contributions under the National Insurance scheme will be paid by the service authorities for class "Z" and other reservists and members of the auxiliary forces called up for training. The employee's contribution will be deducted from his service pay. Army and Air Force reservists and auxiliaries called up for 15 days or three months should not take their National Insurance cards with them, but should take a note of their National Insurance number which they can get from their employers. The cards should be kept by employers and exchanged at the usual times. Officers and men recalled to the Navy or R.A.F. for eighteen months' service must take their National Insurance cards with them.

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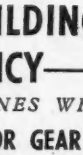

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Films on Building

The three Ministry of Works documentary films on the building industry—"The Task Before the Building Industry," "Care and Maintenance of Plant" and "Watch Your Step"—are to be shown on the following dates: April 11, at 8 p.m., at the Polytechnic, Thomas-st., Woolwich; and April 17, at 7 p.m., at Newtown, Montgomeryshire, in the Technical School.

L.M.B.A. Golfing Society

The second annual dinner of the L.M.B.A. Golfing Society will be held at the Mayfair Hotel on Thursday, April 26. Mr. D. F. Cox, president of the L.M.B.A., and Captain of the society, will preside. Members of the society requiring tickets should apply immediately to the Hon. Secretary, Mr. P. H. Bates, Old Brickworks, Harold Wood, Essex.

RESEARCH BY D.S.I.R. IN 1950

Nearly 1,000 Subjects Investigated

THE report for 1949-50 of the Department of Scientific and Industrial Research published recently as Cmd. 8169 (Stationery Office, price 4s. 6d.) mentions nearly a thousand researches, completed or being studied, from most industries. As Sir Ben Lockspeiser, K.C.B., F.R.S., Secretary of the Department, has said, small improvements are more valuable at the present time than big advances, and the report shows how many of these small improvements are being made possible by research.

Research work of interest to architects and constructors carried out by the D.S.I.R. includes the use of colour in factories to remove eyestrain, improve conditions of work and increase production, and surveys of methods used in factories in which a study is made of such things as layout, methods of work, transport and the system of routing and feeding in a number of factories. No factory has yet been found to be all good or all bad, but if the worst in each aspect is brought up to the average only, it can result in an increase in productivity of up to 25 per cent.

Studies of the use of steel in steel-framed buildings have shown that the use of welded rigid joints in such buildings can save up to 20 per cent. of steel. Traditional methods of design, however, are no use, for no member of the frame is independent of the others. After some years of investigation, the Building Research Station has produced a quick graphical method which can be used by the designer-draughtsman. Tests on these "plastic" frames for buildings are being carried out by the British Welding R.A.

Another subject dealt with is the plating of metals on aluminium. There is a need in the food industry for a cheap and lightweight metal which will not corrode and can be soldered. The Low Temperature Research Station is developing a method of directly plating aluminium with metals such as nickel.

Street accidents have also been studied. An investigation was carried out by the Road Research Laboratory when Finchley-road, Hampstead, was re-surfaced with a hot rolled asphalt in place of wooden blocks. During the twelve months after the resurfacing accidents in wet weather were reduced by 85 per cent. compared with the 12 months before.

NEW COMPANIES

THE FOLLOWING NEW COMPANIES registered in England have been announced by Jordan and Sons, Ltd., company registration agents:

H. and G. Dunstone (Builders), Ltd. (491061.) Regd. Jan. 31, Weston Green, Thames Ditton, Surrey, bldrs. and contractors, etc. Nom. cap.: £500. Dir.: F. G. Dunstone, Boldre Cottage, Weston Green, Thames Ditton.

J. Sandever and Son, Ltd. (491130.) Regd. Feb. 1, bldrs., contractors, etc. Nom. cap.: £2,000. Dirs.: J. G. Sandever and Mrs. F. A. Sandever, 3, Mayfield Green, Harrogate.

R. J. Free and Sons, Ltd. (491148.) Regd. Feb. 1, 27, Northbrook-st., Newbury, Berks., bldg., highway, road and genl. contractors, etc. Nom. cap.: £6,000. Dir.: R. J. Free, Round Hill Cottage, Cold Ash, nr. Newbury.

Bungalows (Manchester), Ltd. (491177.) Regd. Feb. 2, 20, Whitelake-av., Flixton, Lancs., bldrs., bldrs' mchts., etc. Nom. cap.: £1,000. Dirs.: J. Shaw and Mrs. E. Shaw, 20, Whitelake-av., Flixton.

Watmuff (Contractors), Ltd. (491749.) Regd. Feb. 19, Lower Copy, Allerton, Bradford, bldrs., contractors, etc. Nom. cap. : £2,000. Dir. : E. C. Craven, 5, Dene Mount, Allerton, Bradford.

John E. Nye, Ltd. (491739.) Regd. Feb. 19. The Hollies, Isfield, Sussex, bldrs. and contractors, etc. Nom. cap. : £1,000. Dirs. : J. E. Nye and E. J. Nye, The Hollies, Isfield Sussex.

Websters (Staines). Ltd. (491772.) Regd. Feb. 20. Bridge-st., Staines, Mddx., bldrs., bldg. contractors, etc. Nom. cap. : £3,000. Dir. : R. Webster, 173a, High-st., Staines, Mddx.

Norden Hand Tools, Ltd. (491801.) Regd. Feb. 21. 124, Upper Richmond-rd., Putney, S.W.15, mnfrs. of hand tools and plant for the bldg. trade, etc. Nom. cap. : £100. Dir. : D. Langford, 124, Caldbeck-av., Worcester Park, Surrey.

Stegradou London, Ltd. (491860.) Regd. Feb. 22. 69, Knight's Hill, S.E.27, bldrs. Nom. cap. : £300. Dirs. : S. G. W. Seager and Mrs. G. Seager, 77, Roxburgh-rd., S.E.27.

Denis Barber and Co., Ltd. (491825.) Regd. Feb. 22. Weymouth-st., Warminster, Wilts., plumbers, sanitary and hot-water engrs., etc. Nom. cap. : £500. Dir. A. D. Barber, Cobo, Dilton Marsh, Westbury, Wilts.

George Walsh and Sons, Ltd. (491832.) Regd. Feb. 22. 15/17, Joha-st., Oswaldtwistle, bldrs., government and public works contractors, etc. Nom. cap. : £4,000. Dir. : G. W. Walsh, Beverley, Hollins-la., Accrington.

W. H. Young (Leyton), Ltd. (491912.) Regd. Feb. 23, Abbotts Park-rd., Leyton, E.10, bldr. and decorator. Nom. cap. : £1,000. Dirs. : G. T. Young and Mrs. M. D. Young, 77, Heathcote-gr., Chingford, E.4.

A. Beaumont (Bexleyheath), Ltd. (491865.) Regd. Feb. 23. 20, Crook Log, Bexleyheath, Kent, bldrs. and contractors, etc. Nom. cap. : £100. Dirs. : A. Beaumont and Mrs. E. M. Beaumont, 63, Danson-rd., Bexleyheath, Kent.

F. Adamson, Ltd. (491875.) Regd. Feb. 23, Conyers-chmbrs., 135, Sandyford-rd., Newcastle-on-Tyne, bldrs., contractors, etc. Nom. cap. : £2,000. Dir. : S. Brook, 29, Briar Dene-cres., Whitley Bay.

Structural and Erection Co., Ltd. (491906.) Regd. Feb. 23. Albion-par., Gravesend. Nom. cap. : £1,500. Dir. : J. Whattler, Polperro, Rochester-rd., Gravesend.

S. W. Vaus, Ltd. (491907.) Regd. Feb. 23. Far End, Hoskins-rd., Oxted, Surrey, bldrs., contractors, etc. Nom. cap : £4,000. Dirs. : S. W. Vaus and Doris M. Vaus, Far End, Hoskins-rd., Oxted, Surrey.

Caller and Brockwell, Ltd. (491921.) Regd. Feb. 24, 175, Bermondsey-st., S.E.1, bldrs., constructional engrs., etc. Nom. cap. £1,000. Dir. : A. F. Caller, 21, Aylward-rd., Forest Hill, S.E.23.

Marshall (Folkestone), Ltd. (491943.) Regd. Feb. 24. 37, Cheriton High-st., Folkestone, bldrs. mchts., etc. Nom. cap. £1,000. Dirs. : A. Marshall and J. M. Marshall, 37, Cheriton High-st., Folkestone.

Moore and Garnham, Ltd. (491944) Regd. Feb. 24, 34, Walpole-st., Wolverhampton, bldrs. and contractors. Nom. cap. £2,000. Dir. : M. Garnham, 38, Park-rd., West Wolverhampton.

Richard Maddern, Ltd. (491951.) Regd. Feb. 24, 89, Woodstock-rd., Wembley, bldrs. and bldg. contractors, etc. Nom. cap. £5,000. Dir.: R. H. Maddern, 89, Woodstock-rd., Wembley.

G. T. Scudamore (Builders), Ltd. (492037.) Regd. Feb. 28, 58, Footscray-rd., Eltham. Nom. cap. £5,000. Dirs.: G. T. Scudamore and G. M. Scudamore, 251, Chiclehurst-rd., Petts Wood.

J. Murphy and Sons, Ltd. (492,042.) Regd. Feb. 28, 43, Charteris-rd., Finsbury Park, N.4, bldrs., etc. Nom. cap. £20,000. Dirs.: J. Murphy and Christina M. Murphy, 76, Riversdale-rd., N.4.

T. Ardern and Son, Ltd. (492002.) Regd. Feb. 27, 80, Spital Hill, Sheffield, bldr. and contractor. Nom. cap. £5,000. Dir.: J. W. Ardern, 187, Ecclesall-rd., South, Sheffield.

Capewell and Humphreys, Ltd. (492088.) Regd. Mar. 1, 12, Arcola-st., Hackney, E.8, bldrs., etc. Nom. cap. £500. Dir.: J. D. Capewell, 12, Arcola-st., E.8.

Curtis Redmile and Son, Ltd. (492142.) Regd. Mar. 2, 61, Gleadless Common, Sheffield, bldrs. and bldg. contractors, etc. Nom. cap. £2,000. Dir.: C. Redmile, 11, Gleadless Common, Sheffield.

J. E. Murphy, Ltd. (492162.) Regd. Mar. 2, 10, Graham-ave. Brighton, 6, bldg. and civil engng. contractors, etc. Nom. cap. £500. Dirs.: W. C. Megranahan and V. G. Megranahan, 8, Belmont-ave., New Malden.

John Fishwick and Sons, Ltd. (492163.) Regd. Mar. 2, bldrs. and contractors. Nom. cap. £3,000. Dirs.: J. Fishwick, Senr., and J. Fishwick, Junr., Quarry Bank Yard, Walton-le-Dale, Lancs.

R. S. Rowe and Son (Porthcawl). (492187.) Regd. Mar. 2, 113, New-rd., Porthcawl, bldrs. and contractors. Nom. cap. £2,000. Dirs.: R. S. Rowe and A. L. Rowe, 113, New-rd., Porthcawl.

Taylor Bros. (Cambridge), Ltd. (492196.) Regd, Mar. 2, 62, Victoria-rd., Cambridge, plasterers, bldrs. and bldg. contractors, etc. Nom. cap. £2,000. C. E. Kirkman, 420, Cherryhinton-rd., Cambridge.

Guy Methven and Co., Ltd. (492222.) Regd. Mar. 3, 192 and 194, Lancaster-rd., Enfield, Mddx, bldrs., etc. Nom. cap. £2,500. Dirs.: W. T. Methven and W. A. H. Guy, 192, Lancaster-rd., Enfield.

J. E. Smith (Worksop), Ltd. (492229.) Regd. Mar. 3, Kilton-rd., Worksop, Notts, bldr., and contractor. Nom. cap. £10,000. Dirs.: J. E. Smith and J. E. Smith, Junr., 73, Kilton-rd., Worksop.

R. H. Harris (Marlow), Ltd. (492244.) Regd. Mar. 3, 27, Little Marlow-rd., Gt. Marlow, Bucks, bldrs. and contractors. Nom. cap. £5,000. Dir.: L. H. Harris, 27, Little Marlow-rd., Gt. Marlow, Bucks.

S. and R. Robinson (Doncaster), Ltd. (492325.) Regd. Mar. 6, 62, Florence-ave., Balby, Doncaster, bldrs. decorators, etc. Nom. cap. £3,000. Dir.: S. C. Robinson, 62, Florence-ave., Balby, Doncaster.

Amos Hall and Son, Ltd. (492332.) Regd. Mar. 7, 23, Gloucester-st., Winchcombe, Cheltenham, Glos, bldrs., and contractors, etc. Nom. cap. £5,000. Dirs.: A. Hall, 35, Gloucester-st., Winchcombe, Glos.

Hinscliff Hewitt and Sons, Ltd. (492430.) Regd. Mar. 8, Southfield, Haswell, Co. Durham, bldr. and civil engng. contractor. Nom. cap. £7,000. Dirs. : H. Hewitt and Mrs. F. E. Hewitt, Southfield, Haswell, Co. Durham.

R. G. Spiller, Ltd. (492451.) Regd. Mar. 8, High-st., Chard, Som., bldr. and contractor. Nom. cap. £20,000. Dir.: R. G. Spiller, Quarry-hse., Blagdon Hill, nr. Taunton.

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KENT BUILDING PROGRAMME

A Five-year Development Plan

AN expenditure of £36,000,000 on housing during the first five years of the Kent County Development Plan is forecast in a preliminary statement presented to the County Council by the Planning Committee.

With the slow overtake of needs for rural housing and the possibility of fewer sites being available, the Committee thinks it is reasonable to assume the provision of 1,000 houses a year by the Rural District Councils. Another 350 new houses a year are likely to be provided by private builders. In the boroughs and urban districts the Committee estimates the building of another 2,500 houses a year by local authorities and about 650 by private builders, making a total house-building programme of 4,500 a year.

On a sample of housing needs registered by local authorities the existing need is 52,000 houses which, at the present rate of progress, will take 12 years to build. No account is taken of a possible increased population or of the necessity of replacing dwellings now, or likely to become, unfit for human habitation.

The average cost per house, including cost of site preparation, appears to be about £1,500 for local authority houses and £2,000 for private building. At 4,500 houses a year, this represents £36 m. during the first five years of the Plan and £7,250,000 each year after that until (perhaps after the 15th year of the Plan period) some diversion of resources to other projects may be possible.

The County Council approved the following order of priority as the policy on which the programming of the Development Plan is to proceed: 1. Housing, including necessary streets and other relative services. 2. Industrial development. 3. Education projects. 4. Rural water-borne sewerage and sewage disposal. 5. Roads.

T.P.I. Summer School

The Town Planning Institute has arranged for the Town and Country Planning Summer School to be held at Oxford from September 17 to 22, and for the Institute's 25th annual country meeting to be held at Southampton from May 25 to 27. Particulars are obtainable, in both cases, from the secretary, Town Planning Institute, 18, Ashley-place, S.W.1.

Manchester Scholarships

Manchester Municipal College of Technology is offering six scholarships and six exhibitions, varying in value up to £65, plus approved fees, if resident at home, and £140, plus approved fees, if resident in hostel or lodgings, to part-time students and others, tenable in any one of the full-time day courses of the College for three academic years on condition that those holding these scholarships prepare themselves for the degree of Bachelor of Technical Science. The College also offers the Edmund Mills Harwood Memorial Scholarship in Engineering, value £50 a year, tenable in one of the University courses in the departments of mechanical engineering, electrical engineering or municipal engineering. Forms of application and further information from the Registrar, College of Technology, Manchester, 1.

TRADE NEWS

Aluminium Ladders

Lyte Ladders, Ltd., Rogerstone, Newport, Mon., are producing 500 aluminium ladders a week. This output has been attained in six years.

Change of Address

Sealocrete Products, Ltd., have moved their entire works and offices from Macbeth-street, London, W.C., to larger premises at Atlantic Works, Hythe-road, London, N.W.10. Their new telephone number is Ladbroke 0015-6-7.

A Lift for the Private House

Those with a weak heart, or other disability, will be interested in details of the Shepard Home Lift, supplied by Hammond and Champness, Ltd., Blackhorse-lane, E.17. Simplicity of installation is one of the chief features of the lift, as a motor room, lift shaft and pit are not required. The lift is operated by electricity.

Chestnut Fibre Hardboard

A hardboard made from chestnut hardwood fibres that can be butt-jointed continuously without the aid of cover strips to mar the reeded surface is being made by J. Eidelman (Wallboard Department), 16, Devonshire-square, E.C.2. The standard grade (NDC), for interior work, takes oil or water paint, and there is also available a special water-resistant grade (PKC).

North British Rubber Appointment

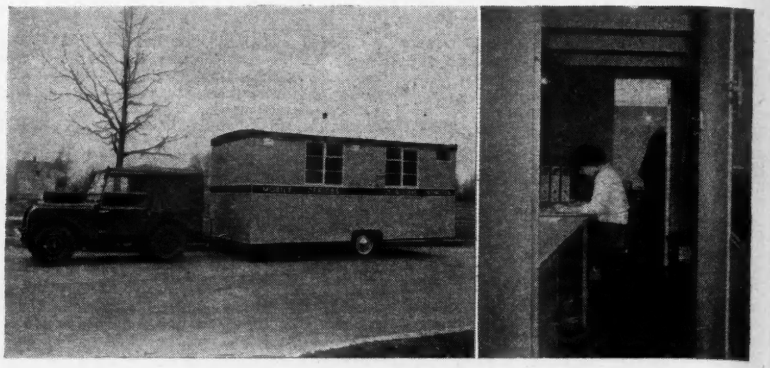
The North British Rubber Company have appointed Mr. G. Benham as manager of sales production co-ordination for the whole company. Mr. Benham joined North British Rubber in 1930, and was in charge of footwear sales production co-ordination until 1949, when he became general footwear merchandising manager. His new duties will cover all products of the company's two factories at Castle Mills, Edinburgh, and Heathall, Dumfries.

New Mobile Crane and Hydraulic Tipper

Two new models have recently been introduced by Wessex Industries (Poole), Ltd., of Dolphin Works, West-street, Poole, manufacturers of "Wrigley" trucks. They are the hydraulic tipping truck (Model 339), and mobile crane (Model 210). The tipping truck has an all-steel chassis and body and is powered by standard 3 h.p. Villiers engine, with three-speed and reverse Albion gearbox. The mobile crane has a triangular steel jib, and is fitted with detachable 15-cwt. ratchet block with roller chain and swivel hook. In this case the power is by a standard 1 h.p. Wrigley unit, with three-speed gearbox.

Timber Shuttering Panels

Austins of East Ham, Ltd., London, E.6, have recently issued a pamphlet relating to their Grangewood pre-formed timber shuttering panels. These panels are constructed of 1¼-in. finished timber held together at the joints by corrugated metal fasteners and by a steel rod sunk into a dove-tail groove at each end. The result, it is claimed, is a panel allowing individual swelling or shrinkage of each component board without tension and without any opening up of joints. It is further claimed that no warping occurs and that the panel comes easily away from the set concrete. The Grangewood panel is supplied in standard sizes of 4 ft. 10 in. by 1 ft. 6 in. and 2 ft. 5 in. by 1 ft. 6 in. Other sizes can be produced to special requirements if large numbers are needed.



A mobile site office manufactured by Uni-Builders, Sanderstead-road, Orpington, Kent. These units are supplied constructed on all steel welded chassis fitted with pneumatic tyres and ball type towing hitch, furnished with desks, chairs, drawing-tables, plan chests, lock-up cupboards, and built-in fireproof steel cabinets. Calor gas heating and lighting is installed, although, where required, they would be wired for electricity. Each unit has separate compartments fitted with Elsan closets and wash basins respectively. Body construction is of hardwood, clad externally with Masonite and internally with Lloyd hardboard. The roof is fully insulated, and the flooring is finished with Marley tiles laid on ¾ in. jointless board. Two models are at present in production, one 18 ft. by 7 ft. 6 in. by 7 ft. high, the other 12 ft. by 7 ft. 6 in. by 7 ft. high

Timber Seasoning

Advantages of timber seasoning by kiln drying, as opposed to the older "natural" methods are explained in Timber Seasoning (4704), a booklet produced by the Sturtevant Engineering Co., Ltd., Southern House, Cannon-street, E.C.4. Various types of kiln made by the firm are described and illustrated, with particular emphasis on the importance of correct control of draught, temperature and humidity during drying.

Excavators to be made in England

A licence recently granted to John Blackwood Hodge and Co., Ltd., by the Marion Power Shovel Co., of Marion, Ohio, will permit the manufacture of Marion Excavators in the United Kingdom, commencing immediately. A full range of models will eventually be manufactured in Great Britain, but production is starting immediately with the Marion 111-M 3½-4 cubic yard model, and delivery of the first machines is expected in about 18 months' time. Distington Engineering Co., Ltd., of Workington (subsidiary of The United Steel Companies, Limited) have been appointed by the Blackwood Hodge Organisation, under a long-term Agreement, to manufacture the range of models, with the full approval of the American manufacturers.

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Advantages of Panel Warming

The numerous advantages claimed for panel heating in hospitals, public buildings, schools and private houses by means of warm water pipes embedded in ceilings, floors or walls are described in detail in Invisible Panel Warming, a booklet published by the Invisible Panel Warming Association, 136, Grand Buildings, Trafalgar-square, W.C.2.

Abbey National's Successful Year

The Abbey National Building Society's accounts for the past year show that total assets expanded by £18,000,000 to £122,000,000. During 1950 over £29,000,000 was advanced to assist borrowers to acquire their homes. The Society's proportion of liquidity in the balance sheet increased during the year, the total of trustee investments and cash at December 31 last being £16,700,000.

Councils Increase Rents

Paddington and Poplar Borough Councils are to increase the rents of their prefabricated houses owing to higher maintenance costs. The increases, which start at the beginning of April, are:— Paddington: 11s. 3d. to 13s. and 11s. 9d. to 14s., with a further 1s. increase in December; Poplar, 9s. 3d. to 10s. and 9s. 9d. to 10s. 6d.

Avon Tannery not Permitted

To safeguard the amenities of the Avon Valley, the Minister of Local Government and Planning has refused the appeal of the Avon Leather Dressing Co., Ltd., to open a tannery in the Avon Mill premises, Limpley Stoke, near Bath. Mr. Dalton regards the locality as unsuitable for industry and supports the proposals of the Wiltshire and Somerset County Councils to preserve the area as one of special amenity.

Sulphuric Acid Scheme Approved

The Government has given approval to a scheme for the erection of a large plant to produce sulphuric acid from anhydrite, a calcium sulphate. The cost is estimated at £3½m. to £4m., and the plant, which will probably be set up at Merseyside, is expected to produce 150,000 tons of acid a year. It is understood that Imperial Chemical Industries, Fisons and Courtaulds are interested in the scheme, and a new company may be formed to finance it.

OFFICIAL NOTIFICATIONS

Local Land Charges

The Ministry of Local Government and Planning have issued Statutory Instrument No. 185, Land Charges, England: The Housing Act, 1949 (Registration of Conditions) Rules, 1951, which were made by the Lord Chancellor under the Housing Act, 1949, and the Land Charges Act, 1925, and came into operation on February 15. These Rules amend the Local Land Charges Rules, 1934, to provide for the registration in Part IV of the Local Land Charges Register of conditions required to be registered by Section 23 of the Housing Act, 1949, with respect to dwellings in respect of the provision or improvements of which financial assistance has been given under Section 20 of that Act.

Non-Ferrous Scrap

The Minister of Supply has made a new Order to overcome certain anomalies in scrap metal trading and to remove difficulties which have prevented the free flow of non-ferrous scrap to industry during recent weeks. The Order—the Non-Ferrous Metals Prices (No. 2) Order, S.I. 1951, No. 425—came into operation on March 17, and makes the following alterations:

The maximum commission for merchants on material other than lead is increased from 2 per cent. to 3 per cent.; the maximum charge for bagging is increased from 9d. per bag to 1s. 6d. per bag, or 25s. per ton, whichever is less; a charge for briquetting not exceeding 25s. per ton is authorised; the basis of lead prices is changed from "delivered buyer's address" to "ex-depot," with the proviso that when lead material is delivered by the seller the charges for delivery shall not exceed £2 per ton; provisions relating to invoices have been amplified; a number of definitions have been clarified, and price changes made. Copies of the Order can be obtained from H.M. Stationery Office.

Hire of Contractors' Plant

Owing to increases in the wages of drivers and operators, amended rates have been recommended to replace those in the fourth column of Part II of the third edition of the Schedule of Clause 1 (b) Rates for use in conjunction with the Control of Rates of Hire of Plant Order, 1950, which was issued on February 12, 1951 (P.I.47/1, M.O.W. 15/51). The new rates set out in column 4 of Part II of the amended third edition of the schedule became effective on February 12, and those in column 5 on March 5, 1951. A note is embodied in the schedule showing the two further increases of threepence each per week which become effective as from March 26 and April 2 respectively.

Copies of the amended third edition of the Schedule of Clause 1 (b) Rates can be obtained free on application to The Secretary (A.S.72), Ministry of Works, Lambeth Bridge House, London, S.E.1. Copies of the Order itself (S.I.1950, No. 2060) can be obtained from H.M. Stationery Office, price 2d. each.

Examination Particulars

The Institution of Sanitary Engineers, 118, Victoria-street, Westminster, S.W.1, has recently published "Particulars of Examinations," 1950 Edition. This is a reprint of the 1946 edition but with revisions in the Regulations and an addition to the Syllabus.

THE SCOTTISH BUILDER

NEW BUILDINGS

Aberdeen.—Corpn. Housing Com. propose to erect 70 Dunedin houses at Mastrick, 240 traditional brick houses, including 12 police, at Northfield, and 20 at Balnagask, to cost £325,000.

Ayr.—Extensions to the premises of Alexander Cuthbert & Sons, manufacturers, MacColls-ave., Ayr, to cost £25,000.

Ayr.—28 houses at the Dalmelling housing estate, for which the architect is Mr. Thomas O'Brien, A.R.I.B.A., M.I.Mun.E., Municipal-bldgs., High-st., Ayr. To cost £34,860.

Ayr.—Plans are in hand for a £16,000 scheme and extensions and alterations, etc., at the Sandpan-rd., for which the architects are the Scottish Agricultural Industries, Ltd., staff, 36, Palmerston-pl., West End, Edinburgh.

Ayrshire.—100 houses on Farm-la. site, Drongan, for the Scottish Special Housing Association, Ltd. Architect is Mr. Peter Whiston, A.R.I.B.A., 11, Drumsheugh-gdns., West End, Edinburgh.

East Linton.—T.C. propose to proceed with erection of 20 Miller houses at Drylaw-ter.

Edinburgh.—Plans to be prepared for a new department for the University Court, for which the architect is Sir Frank Mears, F.R.I.B.A., 44, Queen-st. North, Edinburgh.

Edinburgh.—80 houses at Niddrie Muirhall housing site, est. to cost £104,000, for the Scottish Special Housing Association, Ltd. Architect is Mr. Peter Whiston, A.R.I.B.A., 11, Drumsheugh-gnds., West End, Edinburgh.

Forfarshire.—Extension to the Arbroath Ashlader Sanatorium, to cost £10,000. The County architect is Mr. James MacGregor, F.R.I.A.S., County-chbrs., Forfar.

Glasgow.—28 houses to be erected on a site at Cranfield, for which the architect is Mr. Archibald J. Jury, F.R.I.B.A., Corporation Housing Offices, Glasgow Cross, The Trongate, Glasgow, E.C.

Glasgow.—New primary school at Crosstobs-rd., Pollock. Architect is Mr. John MacNab, F.R.I.B.A., 129, Bath-st., Glasgow, W.C.2.

Glasgow.—Dean of Guild Court has granted permission to John Lawrence (Glasgow), Ltd., 137, West Regent-st., to erect 143 houses at Mitre-rd., St. Kilda-dr., Airthley-ave. and Manor-rd., and 183 at Beechwood-dr., Churchill-dr. and Edgehill-rd.

Glasgow.—New transformer buildings at Provan Gas Works for the Scottish Gas Board. Plans by their own architectural staff, 20, John-st., George-sq., Glasgow, C.1.

Glasgow.—Corporation is planning to proceed with schemes for deep shelters-cum-car parks at Blythswood-sq. and Balman-st. The various committees interested have passed the proposal to the Civil Defence Committee asking their approval and seeking a grant on the basis that these shelters will form part of the Civil Defence programme of the city. When not required as shelters they will be used as car parks.

Glasgow.—Corporation plans for 860 flats at Barmulloch have been passed by Dean of Guild Court.

Glasgow.—New buildings at West-st. and Tradeston-st., Kinning Park, for the North British Storage and Transit Co., Ltd. Plans by their own architectural staff, 11, Quality-la., Leith.

Glasgow.—New suite of offices and workshops for Gavin S. Kellers, Ltd., at 70 to 78, Oxford-st., Gorbals. The architect is Mr. Magnus Duncan, F.R.I.B.A., 243, Eglinton-st., Eglinton Toll, Glasgow, S.2.

Glasgow.—Extension for the Muirlees, Watson Co., Ltd., 7, Grosvenor-gnds., London, S.W.1, at Scotland-st. Architects are George A. Boswell & Partners, F.R.I.B.A., 256, West George-st., Blythswood-sq., Glasgow, W.C.2.

Glasgow.—Additions and alterations at The London-rd. for Forresters (Outfitters), Ltd., for which the architects are James Monro & Son, F. & A.R.I.B.A., 307, West George-st., Blythswood-sq., Glasgow, W.C.2.

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FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

APRIL 5.

*†**Lincoln (Parts of Kesteven) C.C.**—Pair of police houses and garage at Leadenham. County A., County Offices, Sleaford.

APRIL 6.

*†**Bristol T.C.**—Alterations and additions to Greenhill House Residential Nursery, Timsbury. Som. City A. Dep. £2 2s.

APRIL 7.

*†**Essex C.C.**—Alterations at Waltham Abbey Primary Sch. (cost £4,560). County A.

*†**Peterborough T.C.**—76 houses at Eastfield estate. City E. & S., Town Hall. Dep. £2 2s. Tenders by April 30.

APRIL 9.

*†**Essex Standing Joint Committee.**—Applications invited from building contractors to be placed on selected lists for erection of police houses. H. Conolly (F.), County A.

*†**Herefordshire C.C.**—Alterations, additions and decorations, Old People's Home, Belle Orchard House, Ledbury. County Welfare Officer, 10, St. Owen-st., Hereford. Dep. £2 2s.

Hiraethog R.D.C.—10 houses, Eglwysbach, near Llandudno junction. C., Council Offices, Avondale, Llanrwst. Dep. £3 3s.

*†**Leek U.D.C.**—19 houses at Harrogate estate, contract 2. J. A. Gilchrist, F.R.I.C.S., architect, Town Hall. Dep. £5 5s.

Shaftesbury B.C.—22 bungalows, Grosvenor-rd. estate. H. Orman, C. Dep. £2 2s.

Tavistock.—10 houses and ancillary works at Bere Alston for R.D.C. Rossington & Fogden, architects, National Provincial Bank-chbrs., Tavistock. Dep. £3 3s.

APRIL 10.

*†**Gwyrfai R.D.C.**—Steel-framed factory at Penygroes, Caerns. D. M. Evans, C., Cwellyn, Caernarvon. Dep. £2 2s. Tenders by April 30.

*†**Portsmouth T.C.**—8 shops and 9 maisonettes at Paulsgrove shopping centre. Thomas, Jolly & Grant, Coronation House, King's Terrace, Portsmouth. Dep. £3 3s.

*†**Sturminister R.D.C.**—Four shops, four houses and four garages at Rixon. Ronald A. Phillips & Partners (F. & A.A.), Bush House, 15, Christchurch-rd., Bournemouth. Dep. £1 1s. Tenders by May 2.

APRIL 11.

*†**Sutton and Cheam T.C.**—21 dwellings for aged persons at Burnell-rd., Brunswick-rd. B.E. & S., Municipal Offices, High-st., Sutton. Dep. £5 5s. Tenders by May 18.

APRIL 13.

*Barnes T.C.—Weighbridge pit and office at refuse destructor. B.E. & S.

*†**Newcastle-under-Lyme T.C.**—100 houses at Windermere-rd. estate. T.C., District Bank-chbrs., Penkhull-st. Dep. £2.

*†**West Sussex C.C.**—Alterations and adaptations at "Abbotswood," Rustington, Littlehampton. County A., County Hall, Chichester.

APRIL 14.

*†**Berks C.C.**—Primary school at Blenheim-rd., Maidenhead. County A., Wilton House, Parkside-rd., Reading. Dep. £5 3s. Tenders by May 3.

***March U.D.C.**—Seven old folks' bungalows at Westwood-ave./St. Mary's-dr. W. S. Pickett, M.Inst.R.A., Town Hall. Dep. £2 2s.

APRIL 16.

***Clacton U.D.C.**—(a) Three blocks of 4 flats at Melbourne-rd.; (b) two blocks of 4 flats and one pair of houses at Beaumont-ave.; (c) one pair of houses at Carps-rd. E. & S., Town Hall. Dep. £2 2s.

***Gravesend T.C.**—Rent office and flats, Sun-la. B.E. & S. Dep. £2 2s.

***Morley T.C.**—96 houses at Asquith-ave. estate. Housing Director, National Provincial Bank-chbrs., Queen-st. Dep. £2 2s.

APRIL 17.

***Redcar T.C.**—70 houses, Lakes estate. B.E. Dep. £3 3s.

***Redcar T.C.**—Two blocks of four shops and maisonettes, Dale estate. B.E. Dep. £5 5s.

APRIL 20.

***Shepton Mallet U.D.C.**—16 houses at Ridgeway. C., Council Offices, Market-pl. Dep. £2 2s.

APRIL 23.

***Chingford T.C.**—8 shops with two-storey maisonettes above at Old Church-rd. B.E., Town Hall.

APRIL 24.

***St. Helens C.B.**—Alterations and additions of two wings at Children's Reception Home, Park Farm, Carr Mill. B. & Water E. Dep. £2 2s.

APRIL 25.

***Lancaster T.C.**—40 flats in 3 blocks at Hala estate. City E., Town Hall. Dep. £2 2s.

APRIL 27.

***Fareham U.D.C.**—Pair of houses, Old Isolation Hospital, Highlands-rd. E. & S. Dep. £2 2s.

***Hants C.C.**—Additions at County Farm Institute, Sparsholt. Harris & Porter, 103, Palmerston-rd., Southsea. Dep. £1 1s., payable to C.C.

APRIL 30.

***Birkenhead C.B.**—130 houses at Woodchurch estate, contract 6. H. J. Rouse (F.), Martins Bank-bldg., Water-st., Liverpool. Dep. £5 5s.

***Stevenage Development Corporation.**—Two pairs of houses at Julians-rd. and Grove-rd. Chief Architect and Planner. Dep. £2 2s.

MAY 2.

***†West Sussex C.C.**—Three-form Entry Sec. Mod. Sch. at Horsham (job No. 1900). County A., County Hall, Chichester.

MAY 8.

Bentley-with-Arksey.—40 houses for U.D.C. R. N. Penlington, Council Offices, Cooke-st., Bentley, nr. Doncaster. Dep. £3 3s.

MAY 23.

***Wandsworth B.C.**—Rebuilding of Church of England Chapel, Putney Vale Crematorium. B.E., S. & Architect. Dep. £2.

NO DATE.

***Worcs C.C.**—First portion of new College of Further Education. E. C. Harris & Partners, chartered quantity surveyors, 3, Bedford-sq., London, W.C.1. Dep. £2 2s.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

APRIL 13.

***Barnes T.C.**—External decoration of 26 requisitioned dwellings. B.E. & S., Municipal Offices.

***Sunderland C.B.**—Supply and installation of central heating and hot water, etc., at Technical College extensions. G. T. Brown & Son, architects, 53, Fawcett-st., Sunderland. Dep. £2 2s.

APRIL 16.

***National Union of Mineworkers.**—Internal and external decoration of Miners' Hall, Red Hill, Durham. General Secretary.

GENERAL BUILDING WORK (LONDON)

City.—Offices, Restaurant, Car Park, Etc.—To be built on the site of 47-67, Gresham-st., 1-6, Lovela., 66-75, Aldermanbury, and 27-36, Wood-st., E.C.2, covering an area of about 50,000 sq. ft. Plans are being prepared by G. Felix Wilson, L.R.I.B.A., 4, Russell-gdns., W.14, in conjunction with Sir John Burnet, Tait & Partners, 10, Bedford-sq., W.C.1.

City.—Rebuilding.—Plans have been prepared for a large light industrial building at the corner of Fore-st. and Whitecross-st., E.C. Architect is G. Felix Wilson, L.R.I.B.A., 4, Russell-gdns., W.14.

Croydon.—Factory.—Town planning permission given to Percival Newman, Ltd., 5a, Gloucester-rd., West Croydon, to erect factory at Milton-ave.

Croydon.—Houses.—Town planning permission given to New British Garden Estates, Ltd., 141, Shirley-rd., East Croydon, to erect 10 houses at Gravel Hill.

Dagenham.—Factory Building.—B.C. granted approval for chemical process building for May & Baker at Rainham.

Dagenham.—Bakery.—B.C. approved plans of bakery for London Co-op. Society, Ltd., at Hainault Industrial estate.

Dagenham.—Factory and Offices.—B.C. granted approval for proposed factory and offices for David Dowting & Co., Ltd., at Hainault Industrial estate. Architect is F. J. F. Brooksbank, L.R.I.B.A., 26, Mawney-rd., Romford.

Edmonton.—Sports Centre.—B.C. propose to erect a sports centre at Jubilee Park to cost £60,000.

Greenwich.—Warehouse.—Taylor Brog. Wharfage Co., Ltd., Upper Thames-st., E.C.4, are to build a large warehouse at Morden Wharf, S.E. Architects are Husband & Co., 70, Victoria-st., S.W.1.

Hornchurch.—Houses.—U.D.C. approved plans of nine houses at River-dr. for Mr. K. B. Young.

Hornchurch.—Houses.—U.D.C. approved plans of 11 houses at Elmhurst-dr. for Mr. A. Carter.

St. Marylebone.—Appointment.—Housing Com. appointed William C. Inman & Partners, 7, New-sq., Lincoln's Inn, W.C.2, quantity surveyors for Nos. 35-55, Boundary-rd. scheme (site No. 4).

St. Marylebone.—Appointment.—Housing Com. appointed W. W. Dewar, M.I.Struct.E., 4, Ridgemont-st., W.C.1, structural engineer in connection with one of four blocks of flats proposed at Hamilton-ter., Carlton Hill site.

St. Marylebone.—Appointment.—Housing Com. appointed Dearle & Henderson, FF.R.I.C.S., 123, Victoria-st., S.W.1, quantity surveyors for Hamilton-ter., Carlton Hill, scheme.

St. Marylebone.—Offices, Flats, Etc.—Town planning sanction has been received for a new six-storey building comprising offices, consulting rooms and flats, 103-105, Harley-st. Architects are L. M. Gotch & Partners, 21, Bunhill-row, E.C.1.

St. Marylebone.—Houses.—B.C. propose to erect 48 houses at Boundary-rd. Architect is Armstrong & MacManus, FF.R.I.B.A., 19, Manchester-sq., W.1.

St. Pancras.—Appointment of Architects.—B.C. approved appointment of Hugh Roberts & Davies, F. & A.R.I.B.A., 27, Grosvenor-pl., S.W.1, for 50 flats at area "C," Regent's Park scheme.

St. Pancras.—Appointment of Architects.—B.C. approved appointment of J. M. Austin-Smith & Partners, A.R.I.B.A., 29, Sackville-st., W.1, for conversion work at 52, Camden-sq.

St. Pancras.—Appointment of Architects.—B.C. approved appointment of Powell & Moya, AA.R.I.B.A., 36, Gt. Smith-st., S.W.1, for 96 flats at Lambe-st.

St. Pancras.—Sites for Building.—B.C. Housing Com. propose to purchase area between Allcroft-rd. and Wellesley-rd. for 46 houses; area at island site bounded by Goldington-cres., Warrington-st., Charrington-st., Crowndale-rd. for development of Oakley-sq. housing scheme.

Shoreditch.—Flats.—Boro' E. & A. has prepared plans for 96 flats at Britannia-walk.

Shoreditch.—Flats.—B.C. propose to erect 12 flats at Shepherdess-walk, plans for which are being prepared by Boro' E & A.

Shoreditch.—Flats.—B.C. propose to erect 40 flats at Bracklyn Court, for which the Boro' E. & A. is preparing plans.

Southgate.—Flats and Houses.—B.C. propose to borrow £68,900 to build 36 flats and six houses at Reservoir-rd. Plans by Council's Architects' Dept.

Stepney.—Flats.—B.C. has approved plans for extension at Bancroft-rd. housing scheme to provide 12 flats. Plans by Boro' E. & A.

Wandsworth.—Flats.—B.C. have approved plans prepared by Boro' A. for 12 flats at Endlesham-rd. site, Balham.

West End.—Rebuilding.—Town planning approval has been given for a block of offices and showrooms at 103-105, Great Titchfield-st., 18-20, Gosfield-st. and 120-126, New Cavendish-st., W.1. Architects are Lewis Soloman & Sons, 21, Bloomsbury-way, W.C.1.

(PROVINCIAL)

Aldenham.—New laboratories, offices, for the Lister Institute of Preventative Medicine. Architects, Waterhouse & Ripley, Staple Inn-bldgs., High Holborn, W.C.1. Quantity surveyors, Williams & Hunt, 40, Furnival-st., E.C.4.

Anglesey.—C.C. approved sketch plans for a nursery unit at Bronheulog Children's Home at £12,000.

Ashby.—U.D.C. propose to erect 72 houses at Moira-rd.

Barrowford.—U.D.C. propose 12 houses at Oakfands-ave.

Birkenhead.—Boro' A. to prepare plans for 22 houses at Mount estate (Contract 8), and a block of flats at Quigley-st. area.

Birmingham.—Royal Institute for the Blind approved scheme for extensions to Cowley Home for Blind Women. Architects, J. A. Chatwin & Son, 38, Great Charles-st., Birmingham.

Blackburn.—T.C. seek loan of £69,684 for 58 houses at Green-la. site and £25,666 for 20 houses, Clarendon-rd.—B.E., W. Pickstone, to prepare plans for erection of new swimming baths.

Blackburn.—R.D.C. seek loan of £35,750 for 22 houses at Billington.

Bolton.—B.C. to invite tenders for adaptations at "The Holmes" as a hostel for the aged.—Approved plans for extensions, Peel Mills, Slater-la., for Knowles, Ltd.; extensions at Manchester-rd. for Railway Wagon & Ironworks Co., Ltd.; extensions to works at Springfield-rd. for Wolstenholme Bronze Powders, Ltd.; extensions to assembly shop at Blundell-st. for John Booth (Bolton), Ltd.; hotel at Crompton-way/Tonge Moor-rd. for Wm. Tong & Sons, Ltd.

Bristol.—Sites in the Central Area Shopping Centre, to replace war-destroyed property, have been allocated, in a first stage, to Marks & Spencer, Ltd., 82, Baker-st., W.1 (architects, James M. Monro & Son, 32, Clarendon-rd., Watford); Upsons, Ltd. (Dolcis Shoes), 7, Great Dover-st., S.E.1 (chief architect, Ellis E. Somake, F.R.I.B.A.); F. W. Woolworth & Co., Ltd., 1, New Bond-st., W.1 (chief architect, H. Winbourne, F.R.I.B.A.); Dorothy Perkins, Ltd., 17, Newman-st., W.1 (architects, Browett, Taylor & Co., 3, Lincoln's Inn Fields, W.C.2); Montague Burton, Ltd., Hudson-rd. Mills, Leeds (chief architect, N. Martin, A.R.I.B.A.); H. Samuel, Ltd., Hunters-rd., Birmingham (architects, W. H. Watkins & Partners, F.R.I.B.A., 1, Clare-st., Bristol).

Bristol.—Pilkington Bros., Ltd., St. Helens, Lancs, are to build new offices and showrooms in St. Thomas's-st. Architects, Oatley & Brentnall, 12, Great George-st., Bristol.

Bury.—B.C. approved plans for hotel, "Old Duke Inn," 410, Brandlesholme-rd.., for Walker & Homfray, Ltd.; extensions to works at Blackford Bridge for British Cotton & Wool Dyers' Association.—Textile printing machine room, Walshaw-rd., for Harridge and Cornall, Ltd. M.O.W. propose telephone exchange adjacent to Union-sq.

Chesterfield.—Brampton Brewery Co., Ltd., propose public-house at Temple Normanton.

Coventry.—Woolworths, Ltd., to commence erection of new departmental store in July at Smithford-st.

Dudley.—B.C. to invite tenders for 50 houses at Brewery Fields estate.

Eastbourne.—War Damage Commission has awarded a sum of £68,000 towards the rebuilding of St. John's Church, Meads, the cost of which will be about £100,000. Architects, Seth-Smith, Monro & Matthew, 7, High Holborn, W.C.1.

Ellesmere Port.—U.D.C. received permission to erect a new public hall at £100,000.

Epsom.—New out-patient dept., pathological block and extension of boiler-house and services at Epsom District Hospital is proposed by South-West Metropolitan Reg. Hospital Brd, at an estimated cost of £289,000. Architect, Gordon Jeeves, F.R.I.B.A. 61, Catherine-pl., S.W.1. Consultant engineers, Wingfield Bowles & Partners, 32, Old Queen-st., S.W.1. Quantity surveyors, A. E. Thornton-Firkin & Partners, 17, Fitzhardinge-st., W.1.

Huddersfield.—Huddersfield & District Co-op. Society propose erection of a new bakery at £54,000.

Keighley.—T.C. recommended to approve plans for 78 houses at Bracken Bank estate.

Kingston-on-Thames.—Plans have been approved for rebuilding of 17-19, Clarence-st. Architects, Brewer, Smith & Brewer, 11, The Green, Richmond, Surrey.

Leamington Spa.—B.C. approved preliminary sketch plans for 24 flats at Tachbrook-st. site.—Propose 80 houses at Whitnash estate.

Leics.—E.C. approved following schemes for 1951/2 programme:—One instalment, Loughborough Sec. (£150,000); Queniborough Junior (£18,480); Wigston Magna Sec. (completion) (£83,840); science block at Loughborough College (£17,000).

Loughborough.—Leics E.C. approved new gymnasium at Training College at £25,000.

Manchester.—Reg. Hospital Brd. approved alterations to St. Luke's Clinic, Salford.; modernisation of bathrooms and clinical rooms at Townleys Hospital, Bolton.

Mansfield.—T.C. approved plans for combined highways and health depot at Great Central-rd.

Middlesbrough.—E.C. is being recommended to include in its building programme for next year a £160,000 plan for a county college to accommodate 400 students.

Middleton.—B.C. approved erection of a short-stay home for children at Berwyn-ave. for Lancs C.C.

Newcastle-on-Tyne.—T.C. is to erect 16 houses at Guildford-pl.—City A. (G. Kenyon), 18, Cloth Market, Newcastle, has prepared plans for 70 houses on Section H of Montagu estate.—F. Sage, 14, Holborn Hall, Gray's Inn-rd., London, W.C.1, has prepared plans for alterations to premises in Grainger-st. for Duffren Trading Co.—C. Solomon, St. Mary's-pl., Newcastle, is architect for 14 houses off Red Hall-dr. for J. T. Bell & Sons, builders, Northumberland-pl., Newcastle.

Newcastle (Staffs).—B.C. to prepare plans for 200 houses at Clayton.

Northampton.—Oxford Reg. Hospital Brd. propose redevelopment and extension of general hospital. Architect, W. F. Howard, 110, Old Brompton-rd., London, S.W.7.

Nottingham.—E.C. approved nursery sch. at St. Peter's-st., Radford, at £22,850.

Oakmere.—Licensing Justices approved rebuilding as a residential hotel of the "Hanging Gate Inn," Weaverham, and erection of a new public-house, "The Salter," for Greenall Whitely & Co., Ltd., Warrington.

Oswestry.—T.C. propose conversion of "Harlech" Castle into self-contained flats.—Propose new abattoir, at £20,000. Plans by Surveyor, J. E. Taylor.

Runcorn.—U.D.C. approved layout of land at Pool-side-rd., for S. V. Broadridge, Ltd.—Additional buildings at Rocksavage Works, for I.C.I., Ltd.—Foam station, Customs house, etc., at Percival-la., for Petrochemicals, Ltd., Eccles.—Cheshire C.C. propose junior sch. at The Grange, and alterations to Technical Institute.

Salop.—C.C. approved central ambulance depot at Abbey Foregate, Shrewsbury, at £22,000.

Seaham.—Newrick & Blackbell, 58, John-st., Sunderland, are architects for proposed alterations to "Dawdon Hotel," King Edward-rd., "Lord Byron Inn," Back North-ter., and the "Northumberland Arms," South Railway-st., for J. Nimmo & Sons.—J. Clark & Sons, builders, Gregson-ter., New Seaham, are to erect offices and garage, Gregson-ter.

Staffs.—C.C. propose combined maternity and child welfare clinic at Brierley Hill, at £16,000; welfare centre at Tipton, at £16,000; occupation centre at Stafford or Tipton, at £15,000. E.C. approved 1951/2 schools programme: Coseley, Park-rd. Junior Dept. (£49,280); Coseley, Pakes Hall-rd. Junior Dept. (£49,280); Rowley Regis, Brickhouse Farm Junior Dept. (£49,280); Hateley Heath Prim. (£43,120); Willenhall Sec. (£134,640); Newcastle-under-Lyme, Bradwell Sec. (one instalment) (£44,880); Stafford, Eastlands Junior (£49,280); Tettenhall Sec. (£89,760); Tettenhall, Castlecroft Junior (£49,280); Lichfield, Wheeler's Inf (£39,960); interior finishing work at Stafford County Tech. College (£30,000); extensions to Cannock Chase Mining & Tech. College (£48,220); adaptations at Kibblestone Hall (£9,200). A. C. H. Stillman, F.R.I.B.A., Cty. A.

Sutton Coldfield.—B.C. approved plans by B.S. for block of shops, flats and houses off Rectory-rd., Falcon Lodge Estate.

Swansea.—M. Jackson & Sons (Clothiers), Ltd., 94-102, Clayton-st., Newcastle-on-Tyne, are to build new showrooms, etc., in Castle-st. Architects, S. J. Stephenson & Gillis, Saville-chbrs., North-st., Newcastle-on-Tyne.

Tarrelyn.—T. Alwyn Lloyd & Gordon, 6, Cathedral-rd., Cardiff, are architects for 1951 housing programme, for R.D.C.

Wallasey.—Cadbury Bros., Ltd., propose erection of a new factory at Moreton.

Watford.—Extension of dairy, etc., St. Albans-rd., is proposed by Watford & District Co-op. Society, Ltd. Plans by W. J. Reed, F.R.I.B.A., chief architect, Co-op. Wholesale Society, Ltd., 99, Leman-st., E.1

West Bromwich.—B.C. has been awarded an immediate starting date for proposed prim. sch., Hampstead. Architect, C. E. M. Fillmore, A.R.I.B.A., 8, Newhall-st., Birmingham. Consultant heating engineers, Hoare, Lea & Partners, 21, St. James-rd., Birmingham. Quantity surveyors, Henry Vale & Sons, 21, Waterloo-rd., Wolverhampton.

Weymouth.—T.C. propose to erect 138 flats at Chapelhay site.

York.—Ed. Com. approved plan for building of Gale-la. Sec. Sch.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Aberdeen.—Northern Co-operative Co., Ltd., are to reconstruct and make additions to the Berryglen-rd. Bakery. Messrs. Tawse & Allan, FF.R.I.B.A., 243, Union-st., West End, Aberdeen, architects. Brick, building and allied works: *George Hall; steel structural works: *Northern Co-operative Society's, Ltd., Direct Labour Dept.

Aycliffe, Co. Durham.—Alteration and extensions to East Anglia Plastics factory. Architects, Cordingley & McIntyre, Durham City: *Holland & Hannen and Cubitts, Ltd., North-East Area Office, Howden, Wallsend-on-Tyne.

Ayr.—New commercial garage, workshops and other additions, for Alexander W. Reid (Ayr), Ltd. Mr. Francis B. Dunbar, architect, The Sandgate, High-st., The Cross, Ayr. Excavation, brick, building and allied works: *James Anderson (Builders), Ltd., Irvine; steel structural works: *Cook Bros., Shettleston, Lanarkshire.

Banffshire.—New commercial garage, etc., at Banff. Mr. G. N. Lobbas, architect, 166, Mid-st., Keith: Excavator, brick building and allied works, *A. Munro & Son, Macduff; plumber and sanitary engineering works, *W. Watt & Son, Banff; electrical fittings and installation, *Henry Watson, Banff.

Blackpool.—Police houses at Plumpton-av., for B.C.: *A. Ashworth, 23, Longridge-av., South Shore, £5,708.

Bootle.—Houses for T.C.: *S. Byrom (Formby), Ltd., Formby, £10,268 (12); *W. L. Murphy, Ltd., Kirkstone-rd. North, Liverpool, £36,917 (24); block of three-storey flats: *W. W. Kenney (Maghull), Ltd., 92, Liverpool-rd. North, Maghull, Liverpool, £17,130.

Bournemouth.—100 houses on Stourfield estate, off Cranleigh-rd., for T.C.: *Wates, Ltd., £119,714.

Bridgwater.—40 Cornish unit houses at Sydenham estate, for T.C.: *Selick, Nicholls & Co., £52,088.

Bristol.—New shops and showrooms, for H. Samuel, Ltd., Hunters-rd., Birmingham. W. H. Watkins & Partners, F.R.I.B.A., 1, Clare-st.: *Henry Willcock & Co., Ltd., Stapleton-rd.

Burnley.—First part of Heasanford county technical school, for E.C.: *Walter G. Birch, Ltd., Springfield-av., Harrogate, £62,626.

Carlisle.—Erection of Harraby infants' school, for E.C.: *R. C. Williamson, Ltd., Rowlands Gill, Co. Durham, £43,060.

Croydon.—Houses at Eastern Section of New Addington estate: *Wates, Ltd., 125-60, London-rd., Norbury, S.W.16, £39,354 (27); *R. Mansell, Ltd., 17-23, Grant-rd., Croydon, £44,715 (30); *Grace & Marsh, Ltd., New Bridge Works, Waddon, Croydon, £29,461 (20).

Daventry.—Houses for R.D.C. Four at Preston Capes, two at Heldon, and four at Farthingstone: *Adkins & Cooper, Ltd., Daventry, £6,434, £3,568 and £6,703.

Durham.—Erection of Durham New Grammar Technical School, for County E.C. G. R. Clayton, County A., Court-la., Durham: *Leslie & Co., Woodlands-rd., Darlington, £256,350 (in place of tender withdrawn).

Easthourne.—Rebuilding after war damage of the Hotel Metropole, 1-2, Royal-parade. Kenneth F. Wray, F.R.I.B.A., architect, 43, Gildredge-rd.: *W. J. Brooker & Sons (Eastbourne), Ltd., 8, Terminus-pl.

East Kilbride.—New Murray primary school, stated to cost £162,657, for Lanarkshire C.C. Mr. William Watt, F.R.I.B.A., architect, County-chbrs., Albert-rd., Motherwell, Wishaw. Excavation, brick building and allied works: *Murdoch MacKenzie, Ltd., Motherwell, Wishaw, £90,241; joinery, carpentry and allied works: *Myton (Scotland), Ltd., Mossend, Bellshill, £13,182; steel sashes and casements: *Frederick Braby & Co., Ltd., Springbarn, Glasgow, £19,077; glazing and allied works: *The Scottish Glass & National Glazing Co., Ltd., Glasgow, £2,033; plumber and sanitary engineering and allied works: *Gilmour & Gray, Glasgow, £9,090; plaster, laths, and allied works: *Willie Walker & Sons (Glasgow), Ltd., Glasgow, £8,696; electrical fitting and installation work: *F. H. Wheller (Scotland), Ltd., Glasgow, £5,157.

Felling-on-Tyne.—50 houses on the Ellen Wilkinson estate. H. Fawcett, U.D.C. Surveyor: *G. Wimpey & Co., Ltd., Newcastle-on-Tyne.

Finchley.—124 flats, Arden estate, for B.C. J. R. Southcombe, A.R.I.B.A., housing architect, The Avenue, N.3. F. N. Falkner & Partners, quantity surveyors, 39, Bedford-sq., W.C.1: *Humphreys, Ltd., Knightsbridge, S.W.7, £176,589.

Fulham.—Six flats at Nos. 52-58 (even), Claxton-gr.:—

F. G. Minter, Ltd.	£14,947
W. J. Marston & Son, Ltd.	13,749
A. H. Franklin & Sons, Ltd.	12,071
Director of Housing & Public Buildings ...	11,799
G. S. Garner & Son (Builders), Ltd.	11,788
*Swan Bros. (Fulham), Ltd	11,382

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Gatley (Ches).—Extensions to telephone exchange, for G.P.O.: *L. Brown & Sons, Ltd., Manchester-rd., Wilmslow.

Glasgow.—New scheme of houses at Kelvinside site, for the Scottish Veterans' Garden City Association Incorporated, Ltd., 124, St. Vincent-st.: *Mactaggart & Nickel, Ltd., 107, West Regent-st., Glasgow, W.C.2.

Glasgow.—New primary school at Pollock (site 7). Mr. John MacNab, F.R.I.B.A., 129, Bath-st., Glasgow, W.C.2: *The Bristol Aeroplane Co. (Housing), Ltd., Weston-super-Mare. £24,277.

Glasgow.—New secondary school at Blockburn-rd., Pollock, Grattan & MacLean, F.R.I.B.A., West Regent-st., Glasgow, W.C.2. Superstructure work and various other works: *The Scottish Orlit Co., Ltd., Contractors, Edinburgh, £91,982 and £7,500; building and general work: *Hugh Leggett & Co., Ltd., Barrhead, Renfrewshire, £112,729.

Glasgow.—Plans prepared for the additions and alterations to the warehouse at Jamaica- and Howard-sts. Mr. James Bunyan, A.R.I.B.A., architect, Herbert-st., Hillhead, Glasgow, W.C. Brick, building and allied works: *James MacGlasham & Son; plumber and sanitary engineering work: *John Paterson & Sons (Plumbers), Ltd.; slating and allied works: *William Walker & Sons, Ltd.; joinery, carpentry and allied works: *Dick and Bungay, Ltd.; plaster, lathing and allied work: *John Struthers & Sons, Ltd.; glazing and allied works: *A. S. Wright & Sons, Ltd.

Glasgow.—326 houses at Scotstoun and Broomhill: *John Lawrence (Glasgow), Ltd.

Gosport.—89 houses at Rowner Housing estate: *Hawkins Bros., Ltd., £116,645.

Hemel Hempstead.—Erection of (a) 43 houses and 60 flats and 101 houses and 49 garages; (b) 72 houses and 49 garages, for Development Corporation. Chief architect, H. Kellett Ablett, F.R.I.B.A., Westbrook Hay. H. J. Venning & Partners, quantity surveyors, 16, Gower-st., W.C.1: (a) *George Wimpey & Co., Ltd., Hammersmith-gr., W.6; (b) *J. L. Constantine & Co., Ltd., Dellfield-av., Berkhampstead.

Hereford.—Erection of an auction ring at the cattle market, for T.C.: *Bayley Bros. (Hereford), Ltd., Cotterell-st., £8,539.

Keswick.—Alterations and additions to premises in Otley-rd., for the Northern Gas Board, Newcastle-on-Tyne. Architects, Hope & Davidson, LL.R.I.B.A., 21, Station-rd., Keswick: *I. & R. Hodgson, Stranger-st., Keswick.

Lancashire.—Erection of Phase 1 of the proposed further college of education at Accrington, for E.C.: *J. Gerrard & Sons, Ltd., £106,217.

Leicester.—Erection of Lutterworth primary school, for E.C.: *F. R. Freeman, Ltd., London.

London.—Conversion and reconstruction of Abbey wood Tramways Depot, S.E., as motor omnibus garage, for London Transport Executive. James M. Monro & Son, architects, 32, Clarendon-rd., Watford. A. L. Currie & Brown, quantity surveyors, 32, Clarendon-rd., Watford: *George Parker & Sons, Ltd., 124, Sumner-rd., Peckham, S.E.

London.—New Students' Union building, Malet-st., W.C.1, for University of London. Adams, Holden and Pearson, FF.R.I.B.A., architects, 2, Gordon-sq., W.C.1: *Higgs & Hill, Ltd., Crown Works, South Lambeth-rd., S.W.8.

London.—Repairs, alterations and decorations, St. Katherine's Church, Regent's Park, N.W.1, for the Danish Church Committee. Caroe & Partners, architects, 3, Great College-st., S.W.1: *Grace & Marsh, Ltd., New Bridge Works, Waddon, Surrey.

¶London (Admiralty).—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty.
Baverstock, Wilts: Tarmacadam to hangar floors, W. J. Glossop, Ltd., 101, Cowick-st., Exeter, Devon.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended March 17:—
Electrical wiring and airfield lighting: Aberfren Cable & Construction Co., Ltd., Kidderminser; E. Dyne & Co., Ltd., Newmarket; T. Clarke & Co., Ltd., London, S.W.1. *Electrical installation:* Watson-Norrie, Ltd., Newcastle-on-Tyne. *Civil Engineering:* Chittenden & Simmons Contracting, Ltd., Maidstone, Kent.
Painting work: C. A. Hayes & Sons, Ltd., Bristol 8; S. Lupton & Sons, London, S.W.1; C. J. Else & Co., Ltd., Lincoln; Thos. Cotton, Ltd., Mansfield; T. E. Cundy & Son, Ltd., Leicester; T. & G. Saxton, Mansfield Woodhouse, Notts; Arnold Sharrocks, Ltd., Rochdale; W. C. Simpson & Son, Ltd., Edinburgh 12; Rogers Bros., Ltd., Felixstowe.
Overhauling heating plant: Whitlock Heating Co., Ltd., Preston, Lance.
General maintenance work: Wm. Sindall, Cambridge; Lewis & Watters Ltd., Leamington Spa; G. E. Wallis & Sons, Ltd., London, W.C.2; W. & J. Glossop, Ltd., York; R. S. Hayes (Pembroke Dock), Ltd., Pembroke Dock; Shepherd & Son, Ltd., York; F. B. Thackray & Co., Ltd., Huntingdon; Arthur Stephenson, Harrogate; E. H. Smith (Croydon), Ltd., Croydon; W. E. Chivers & Sons, Ltd., Devizes, Wilts.
Building work: W. J. Channing & Sons Ltd., Burnham-on-Sea; Woodcock Marshall & Co., Ltd., London, W.11; G. C. Munton, Ruskington, Sleaford; Bosworth & Wakeford, Ltd., Daventry; J. M. Jones & Sons (Bldrs.), Ltd., Maidenhead; Dudley Coles, Plymouth.

¶London (War Dept.).—Contracts placed by W.D. during week ended March 17:—
Antrim/Down: building, McKinney & Co., Ltd., Tandragee. *Antrim:* miscellaneous, W. J. Orr, Belfast. *Renfrewshire:* concrete works, Geo. Wimpey & Co., Ltd., Edinburgh. *Kent:* concrete work, Amalgamated Building Contractors, Ltd.,

London, S.W.8. *Surrey:* concrete work, Kent and Sussex Contractors, Ltd., Sidcup. *Kent:* concrete work, Grummant Bros., Ramsgate.

Middlesex: concrete work, Jas. Carmichael (Contractors), Ltd., London, S.W.18. *Lancs:* building alterations, Jas. Tomkinson & Co., Ltd., Liverpool, 5; building alterations, E. E. Coleman, Ltd., Sale; building alterations, Sutch & Miller Hughes, Liverpool, 15. *Cheshire:* building alterations, Thos. Warrington & Sons, Ltd., Ellesmere Port.

Warwickshire: miscellaneous, Geo. Linnecor & Son, Ltd., Birmingham, 6; miscellaneous, Hinkins & Frewin, Ltd., Banbury; electrical work, Rashleigh Phipps & Co., Ltd., Yondon, W.1; mechanical plant, Z. D. Berry & Sons, Ltd., London, S.W.1. *Derbyshire:* demolition work, Jenks Builders, Ltd., Wolverhampton. *Lancs:* Roadwork, Apex Asphalters, Ltd., Cheshire; painting, Woolfall and Rimmer, Ltd., Southport.

Northumberland: building alterations, Samuel **Owst & Sons, Ltd.**, Hull. *Hants:* site preparation, J. Burley & Sons, Ltd., London, S.W.15; provision recreation ground, J. Burley & Sons, Ltd., London, S.W.15. *Wilts:* miscellaneous, E. J. Morgan, Ltd., Trowbridge. *Cornwall:* painting, N. S. Long, Ltd., Poulton-le-Fylde.

Wilts: building alterations, F. & D. Lucas, Salisbury; bakery equipment, Pelkham Bros., Ltd., London, S.W.9; roadwork, A. J. Dunning & Sons, (Weyhill), Ltd., Weyhill. *Dorset:* roadwork, Limmer and Trinidad Lake, Asphalt Co., Ltd., Eastleigh, Hants. *Wilts:* miscellaneous, Downing, Rudman & Bent, Ltd., Chippenham. *Glos:* concrete work, Espley & Co., Ltd., Evesham.

Maidenhead.—28 dwellings at Larchfield estate, contract 3A, for T.C. B.E. & S., 13, Cranford-rise: *J. M. Jones & Sons (Builders), Ltd., Maidenhead, £39,076.

Maidstone.—16 houses at Bearstead, for R.D.C.:

R. Corben & Son, Ltd.	£27,589
W. H. Bensted & Son, Ltd.	26,395
R. Lawrence & Sons, Ltd.	26,986
H. Gedsell	25,984
R. Filmer	25,349
E. W. Ballard	25,127
L. Edwards & Sons	24,908
*J. W. Fernall & Son	23,685

(Subject to M.O.L.G. & P. approval.)

Maidstone.—12 houses at Coxheath, for R.D.C.:

R. Corben & Son, Ltd.	£16,377
R. Filmer	16,844
H. Godsell	16,472
W. H. Bensted & Son, Ltd.	16,422
E. W. Ballard, Ltd. (Rainham)	16,061
R. Lawrence & Sons, Ltd.	15,98
*E. J. Penn, Ltd.	15,79

(Subject to M.O.L.G. & P. approval.)

Maidstone.—14 houses at Staplehurst (South Bank):

R. Corben & Son, Ltd.	£22,09
H. Godsell	21,59
Graham Watts, Ltd.	21,20
R. Filmer	21,17
W. H. Bensted & Son, Ltd.	20,86
*W. Ellis (Etchingham), Ltd.	19,90

(Subject to M.O.L.G. & P. approval.)

Newcastle-on-Tyne.—34 three-bedroomed houses at Kenton, for T.C. City A., G. Kenyon, 18, Cloth-market, Newcastle: *J. H. Fisher & Co., Ltd., Kenton-la., Newcastle-on-Tyne.

Nottingham.—Erection of Melbury primary school for E.C.: *F. R. Freeman, Ltd., London.

Oswestry.—30 houses and 10 houses, for T.C.: *Edward H. Gittins, Ltd., Wrexham, £41,871 and £13,863.

Salop.—Schools for E.C. Copthorne primary: *Thos. Lowe & Sons, Curzon-st., Burton; Madeley primary: *E. G. Lester, Ltd., Cannock-rd., Stafford; alterations and extensions at police divisional headquarters, Shrewsbury: *Onions & Rowley, Forton Heath, Montford Bridge, nr. Shrewsbury.

Scarborough.—36 houses at Eastfield, for T.C.: *Michael Baum & Co., Ltd., 74, Borough-rd., Middlesbrough (recommended).

Staffs.—Erection of Wrottesley Palmers Cross c.p. school, for E.C.: *McKeand Smith & Co., Ltd., Wolverhampton, £21,423.

Stoke-on-Trent.—Works for E.C. Erection of Springfields c.p. school: *C. Cornes & Son, Ltd., Hanley, £57,720.; adaptations and extensions at Longton school of art: *Northmere Building Co., Ltd., Hanley, £14,091.

Tow Law (Co. Durham).—12 aged people's houses for U.D.C. Architects, J. Walter Hanson & Son, 123, Northumberland-st., Newcastle-on-Tyne: *Thomas Armstrong, Ltd., Robson-st., Shields-rd., Newcastle-on-Tyne.

Wallasey.—Erection of Ormonde-st. R.C. secondary school, for E.C.: *Tysons (Contractors), Ltd., Liverpool.

West Mersea.—Six pairs of houses and one block of four dwellings for old people at Coastguard-gdns., Churchfields, for U.D.C. R. J. Sparrow & Partner, architects, 7, North-hill, Colchester:—

E. & T. Burbridge, Colchester	£21,956
Hutton (Builders), Ltd., Colchester	21,766
T. J. Evers, Ltd., Tiptree, Essex	20,715
A. Tredget & Co., West Mersea, Essex ...	20,481
W. A. Hills & Sons, Ltd., Colchester	20,185
*Joseph Moss & Son, Ltd., Colchester ...	19,500

Wirksworth.—24 houses at Country Club site, for U.D.C.: *J. Millward & Sons, Belper, £36,672.

Worcs.—Erection of Malvern Chase secondary school, for E.C.: *Spicers (Worcester), Ltd., Ombersley-rd., Worcester, £157,810.

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